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INDEX TO VOLUME VII.

FAR EASTERN REVIEW

NO. I. JUNE, 1910.

	Page
Neutralization, Extension, or Coercion?	1
Surplus Funds of the Imperial Chinese Maritime Customs Service	2
Chinese Eastern Railway	4
Railway Strategy in China	9
New Steamers Built by the Mitsu Bishi Dockyard and Engineering Company	13
Dynamic Flight	18
Philippine Policy	21
The Sychuan-Hupeh Railway Question	21
Contracting News	22
Far Eastern Railway News	23
Philippine Mining News	24
Far Eastern Engineering, Construction, Commercial and Financial News	25

NO. II. JULY, 1910.

	Page
Railways in China, 1910	37
Sun Ning Railway Company	37
The Russo-Japanese Convention	38
Japan's Colonial Bureau	39
China's Need of Constructive Encouragement	39
Study of Trade Conditions in Orient	40
Railways in Anhui	42
Canton-Hankow Railway	48
Hongkong-Canton Railway	49
Changwei Railway—Kalgan-Suiyan Extension	50
Steam Development	50
The Macao Boundary Dispute	51
The Ferro Motor	53
Pioneer Mining Enterprise in China	54
Osaka Shosen Kaisha	56
Contracting News	56
Far Eastern Railway News	57
Philippine Mining News	59
Personal and General	60
Japanese Emigration to Brazil	60
Publications Received	60
Far Eastern Engineering, Construction, Commercial and Financial News	60
London Metal Market	63
Hemp Statistics	63
Far Eastern Share Quotations	64

NO. III. AUGUST, 1910.

	Page
America in China	70
Manila Waterworks and Sewer Construction	78
A New Transcontinental Railway	83
China's Army and Navy	85
American-Japanese Relations	87
The Spirit of Manila	87
The Proposed Invariable Calendar	88
The Russo-Japanese Convention	88
Japanese Delegates in China	89
China's Navy	94
New Turret Tool Post	96
Remarkable Performance of Induction Motor	97
Extension Kowloon Docks	97
Large Lumber Cargo for China	98
Contracting News	98
Far Eastern Railway News	99
Philippine Mining News	101
Far Eastern Engineering, Construction, Financial and Commercial News	102
London Metal Market	105
Far Eastern Share Quotations	106

NO. IV. SEPTEMBER, 1910.

	Page
The Mineral Resources of the Philippines	113
Gold District of Paracale	114
Baguio Mineral District	115
Aroroy Mining District	117
Gold Placers of Nueva Ecija	118
Mancayan-Suyoc District	119
Philippine Coal	120
Coal in Cagayan Valley	124
Japan in Korea	125
The Annexation of Korea	129
The Chinchow-Aigun Railway	129
Philippine Trade	130
President Tang Shou-Chien's Dismissal	130
Material for Paper	130
The Late Lu Ch'uan-Lin	131
Visit of the American Merchants	131
The Tokyo Floods	132
Success of the Philippine Penal Colony	132
The North China Daily News and Herald's Diamond Jubilee	132
The Eastern Engineering	132
The China North Review Annual	132
The Allgemeine Electricitaet Gesellschaft of Berlin	133
The Gorges of the Yangtsze	135
Far Eastern Railway News	136
Contracting News	138
Philippine Mining News	139
New Candle Factories for Shanghai	139
Far Eastern Engineering, Construction, Commercial and Financial News	140
London Metal Market	143
Far Eastern Share Quotations	144
Shanghai Additional List	146
Singapore Share Quotations	146
Yokohama Share List	148
Philippine Share List	149

NO. V. OCTOBER, 1910.

	Page
Formal Opening of the British Section Kowloon-Canton Railway	151
Opening of the Iloilo-Capiz Line of the Philippine Railway Co.	158
Visit of the American Secretary of War Canton-Hankow Railway	165
Cyaniding in the Philippines	165
Hongkong and Her Railway	167
Railway Development in the Visayas	168
China's Senate	168
Recall of Yuan Shih-kai	169
Death of William C. Cowie	170
Reviews	170
Philippine Railway for 1910	171
Contracting News	175
Far Eastern Railway News	176
Philippine Mining News	179
Far Eastern Engineering, Construction, Commercial and Financial News	180
London Metal Market	183
Far Eastern Share Quotations	184

NO. VI. NOVEMBER, 1910.

	Page
Visit of the Honorary American Commissioners to China	191
Sugar Industry of Negros	203
Chinese Financial Situation	207
Benefits of the Visit of the American Commissioners to China	208
Passing of the King of Siam	208
China's Ancient Commerce with the Americas	208
Shanghai and Her Rubber Problem	208
Democracy's Triumph at Peking	209
Contracting News	212
Philippine Mining News	213
Far Eastern Railway News	214
Far Eastern Engineering, Construction, Commercial and Financial News	215
Far Eastern Share Quotations	218
Index to Advertisers	224

NO. VII. DECEMBER, 1910.

	Page
The Philippine Hat Industry	225
The Trade of Tientsin	235
Philippine Public Works	236
The American-Chinese Loan	241
Modern Education in China	242
Japan's Foreign Trade	243
Proposed Fusion of the F. M. S. with the Straits Settlements	243
Philippine Trade	244
F. M. S. Railways	245
F. M. S. Public Works	247
Contracting News	248
Philippine Mining News	249
Far Eastern Railway News	250
Eastern Engineering, Construction, Commercial and Financial News	251
London Metal Market	255
Far Eastern Share Quotations	256

NO. VIII. JANUARY, 1911.

	Page
New Zealand Railways and Public Works	263
Visit of Commercial Commissioners from the Central West	267
New Water Supply for Cebu	270
Captain Larsen's Trip Through Whirlpool Rapids	274
Liquid Concave Mirror	275
Far Eastern Railway News	276
Chinese Naval and Military Reorganization	279
The Chinese Senate and the Grand Council	279
The Philippine Friar Land Inquiry	280
Friction Over Chinese Exclusion	283
The Manila Cigar Trade	284
Governor Gueritz of Borneo	284
Contracting News	285
Negros-Philippine Lumber Company	286
Philippine Mining News	287
The New Steam Tug Han Shun	287
Engineering, Construction, Commercial and Financial News	288
London Metal Market	291
Far Eastern Share Quotations	292

NO. IX. FEBRUARY, 1911.

	Page
The Maine: Thirteen Years After	299
Lengthening of a Steel Steamer	304
Yunnanfu Electricity Works	305
The West Siberian Railway	306
Water Tube Boilers	306
The Taal Disaster	308
American Capital in the Philippines	315
The Twin Screw Motor Boat Sumatra	319
The Launch Fong Fee	319
British and Foreign Shipping 1909-1910	319
President Godfrey's Address Before Society of Engineers and Architects	320
The Present Status of Mining in the Philippines	321
Reviews	322
Contracting News	323
Philippine Mining News	323
Far Eastern Railway News	324
Far Eastern Engineering, Construction, Commercial and Financial News	325
London Metal Market	327
Far Eastern Share Quotations	327

NO. X. MARCH, 1911.

	Page
The Chinese Army	335
The Imperial Guards	337
Manchuria and Her Wheat Growing Possibilities	346
The New American Diplomacy in the Far East	351
James A. Farrell	353
The Philippine Carnival	353
Far Eastern Trade Situation	353
China and Tibet	354
The Frontier Region of Tibet or the Marches of the Mountze	360
Contracting News	362
Far Eastern Railway News	363
Philippine Mining News	364
Far Eastern Engineering, Construction, Commercial and Financial News	364
London Metal Market	367
Far Eastern Share Quotations	368

NO. XI. APRIL, 1911.

	Page
The Mitsu Bishi Dockyard and Engine Works at Nagasaki	375
Tung Tai Tseung Kee & Co.	387
The Mitsui Dockyard and Works at Kobe	388
The Kawasaki Dockyard Co., Ltd.	391
Yokohama Engine & Iron Works Ltd.	396
The Yokohama Dock Co.	398
The Tsingtauer Werft (Tsingtau)	400
The Kiang-nan Dock & Engineering Works	403
Development of Shipbuilding in Japan	407
The Motor Boat Invasion	408
Decreasing the Danger of Diving	408
A Marine View of Electrical Progress	408
Nicolas Tsu Engineering Works	409
Wilks & Jack, Ltd.	411
The Osaka Iron Works	412
The Hakodate Dock Co., Ltd.	413
The Tokyo Ishikawajima Shipbuilding Yard Ltd.	413
The Shanghai Dock & Eng. Co., Ltd.	414
Vulcan Iron Works, Ltd., Shanghai	421
The Yangtsze Engineering Works, Hankow	422
The Engineering & Shipbuilding Works, Ltd., (Shanghai)	424
The China Engineering Co., Shanghai	426
The Hongkong & Whampoa Dock Co. Ltd.	427
The Taikoo Dockyard & Engineering Co. Ltd., Hongkong	429
Foochow Arsenal & Dockyard	433
The Whampoa Dock & Navy Yard	433
W. S. Bailey & Co.	434
Macdonald & Co.	434
The New Amoy Dock Co., Ltd.	435
The Amoy Engineering Co., Ltd.	436
Tanjong Pagar Dock Board	436
Sabang Harbor & Bay Co.	437
Riley Hargreaves & Co., Ltd.	438
China Borneo Co., Ltd.	440
The Borneo Trading Co.	440
The Varadero de Manila	441
Marine Boiler Water Treatment	441
San Nicolas Iron Works	442
Manuel Earnshaw & Co., Ltd.	443
H. R. Cooper & Co.	443
Messrs. Castle Bros.-Wolf & Sons	443
The Manila Trading & Supply Co.	444
The China General Engineering Co.	444
Government Docks and Engineering Works, Manila	445
U. S. Floating Dock Dewey	445
Remington Kerosene Marine Engine	446
The Motor Boat in the Philippines	447
Other Dockyards in the Far East	450
Bids Opened	451

NO. XII. MAY, 1911.

	Page
China's Cabinet	453
The Four Nation Loan	457
China's Railway Tangle	461
Foreign Advisers to China	462
American Financial Advisers to Persia	464
U. S. Commercial Agent to Orient	465
Yellow Journalism a Menace	465
The Kirin Changchow Railway	466
The Canton-Kowloon Railway (Chinese Section)	468
Formosan Sugar Industry	474
Y. M. C. A. Building at Peking	482
Development of Visayan Trade and Industries	483
Reviews	484
Vulcan Shipyard at Hamburg	484
The Flying Fish	486
Steel Wire Concrete Reinforcement	487
Shanghai Native City Electric Light Plant	490
American Locomotive for Japanese Railways	491
British Locomotive for the Shanghai-Nanking Railway	491

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THE FAR EASTERN REVIEW

VOL. VII.—No. 1. MANILA, SHANGHAI AND YOKOHAMA, JUNE, 1910. 50 Centavos Philippine Currency
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His Excellency HSU SHIH-CHANG,
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Railway Strategy in China.

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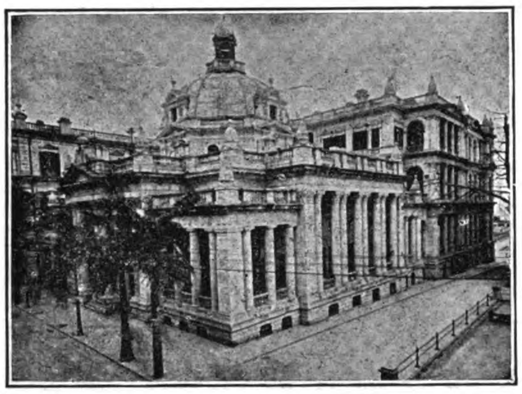

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THE FAR EASTERN REVIEW

COMMERCE ⊛ ENGINEERING ⊛ FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, JUNE, 1910 No. I.

NEUTRALIZATION, EXTENSION, OR COERCION?

When Mr. Knox, the American Secretary of State, proposed the neutralization of the Manchurian Railways as the surest and safest way of preserving to China the undisputed enjoyment of her sovereign rights in the Three Eastern Provinces, of insuring the practical operation of the Open Door and of contributing to the peace of the world by eliminating one of the possible causes of future dissensions, his plan was ridiculed and derided as unpracticable, and rejected by the interested powers as opposed to their schemes for political and commercial aggrandizement. Both Russia and Japan protested most emphatically against any such interference with their acquired rights, and European opinion, with almost unanimous accord, greeted the scheme as a diplomatic blunder. But, as Mr. Knox remarked, he did not expect that his scheme would meet with immediate success, and hardly hoped for a definite answer for several months. So he, at least, was not disappointed. The general opinion is that his scheme has failed, and the episode past and buried, only to be remembered by political opponents who desire to cast discredit for what they prematurely term his errors of diplomacy. But despite all the criticisms, disapprovals, and general decrying of the scheme, time will demonstrate the wisdom of Mr. Knox's diplomacy. Sooner or later, the interested parties will again be compelled to face the issue, and if foreign professions of friendship to China and the Open Door are sincere, other nations will lend their support to the Knox proposal as the only way to preserve peace and the integrity of China. Indeed, unless all signs fail, the time is not far distant. In fact, certain forces are already active hastening the day when a crisis will come in the affairs of China arising out of the Manchurian situation, where neutralization is the only alternative to coercion.

The Port Arthur and Talienwan Agreement of March 27th, 1898, providing for the lease of the Liaotung peninsula to Russia, stipulates, in Article III, that the duration of the lease shall be 25 years from the day the treaty is signed, but it may be extended by mutual agreement between Russia and China. Article VIII covers the extension of the Chinese Eastern Railway to include a branch to Talienwan, subject to the same conditions as the main agreement of 1896. This provided that the Chinese Eastern Railway would revert to China at the expiration of 80 years, and may be repurchased at the end of 36 years. By the Treaty of Portsmouth, Russia's rights were transferred to Japan and officially recognized by the Chinese Government in 1905.

THE COMMANDING OFFICERS OF THE MANCHURIAN MODERN ARMY, (EX-VICEROY HSU IN CENTER)

(*Continued on page 3.*)

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.

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WILLIAM CROZIER, Editor.

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CONTENTS

	Page
Neutralization, Extension, or Coercion?	1
Surplus Funds of the Imperial Chinese Maritime Customs Service	2
Chinese Eastern Railway	4
Railway Strategy in China	9
New Steamers Built by the Mitsu Bishi Dockyard and Engineering Company	13
Dynamic Flight	18
Philippine Policy	21
The Sychuan-Hupeh Railway Question	21
Contracting News	22
Far Eastern Railway News	23
Philippine Mining News	24
Far Eastern Engineering, Construction, Commercial and Financial News	25

TO WHOM DOES THE LARGE SURPLUS FUND OF THE IMPERIAL CHINESE MARITIME CUSTOMS SERVICE BELONG?

The *Shanghai Times* of March 28th ulto., in an editorial on The Imperial Maritime Customs, discloses a situation in the administration of this service which gives food for thought. Dr. J. E. Fergusson, the proprietor of the *Shanghai Times*, is one of the foremost foreign authorities on Chinese political affairs, and has held the most intimate relations with many leading Chinese officials. For many years he filled the post of Foreign Secretary to H. E. Sheng Kung-pao when that official had control of all the railways in the Empire, and he also acts as Adviser to the Viceroys of the Liang Kiang and the Hu Kwang. Dr. Fergusson has long been in close touch with the central authorities at Peking and has enjoyed their confidence to a degree only surpassed by Sir Robert Hart. Dr. Fergusson, therefore, is in a position to state authoritatively the facts relating to many questions of importance, and his editorial on the Imperial Maritime Customs will be accepted as echoing the sentiments of the Chinese Government.

Dr. Fergusson, in commenting on the succession of Mr. Aglen to the post of Inspector-General left vacant by the resignation of Sir Robert Hart, says:

"It is fortunate that during these years Mr. ANGEL will be in charge, for he is a man in the prime of life and with a thorough knowledge of the routine work. He will now be called upon to solve the larger problems which surround the future of the Imperial Maritime Customs. These larger probems include the relation of the Service to the Chinese Government, the abolition of the system of Farmer-general by which the Inspector-General receives a stated sum for the collection of the revenue at each port and the transference to the Chinese Government of the large balance which, it is understood, now stands to the credit of the Service out of the unused funds allocated from each port for the support of the Maritime Customs. While these affairs were all in the control of Sir ROBERT HART there was no necessity of disturbing the arrangement, but now that a change is being made, it is high time that the public should know the internal management of the Maritime Customs. A full statement should be made public as to the amount taken over by Mr. AGLEN from Sir ROBERT HART and held by him as trustee on behalf of the members of the Service. Unless this step is taken there can be no possibility of establishing a closer relation between the Customs and the Chinese Government, and without such closer relationship it is difficult to see how efficient management can be continued. Mr. AGLEN is probably as unfamiliar with the inside working of the Inspector-General's office as any other man in the Service, but it is to be hoped that he will take the public into his confidence by giving in the next Annual Report a full statement of the present financial condition of the Inspectorate-General."

And here Dr. Fergusson gives the world an insight into a situation which calls for an immediate explanation.

Sir Robert Hart, in his autocratic administration of the Imperial Maritime Customs, conducted its affairs and disposed of the patronage and salaries without reference to any higher authority. The Chinese Government, it appears, set aside from the customs receipts of each treaty port a stated sum for the maintenance of the Customs Service which was periodically forwarded to Sir Robert Hart at Peking, and all disbursements for the maintenance of the service were made from the central office.

It appears, however, that the late Inspector General administered the affairs of the service so economically that a goodly surplus was left at the expiration of each fiscal year. As the years passed this surplus increased and multiplied until now, as is understood, it amounts to over ₱1,000,000, and, instead of this sum being returned to the Chinese Government as unexpended appropriations, it is deposited to the credit of the service in a London bank. The exact amount of this surplus is not known, owing to the fact that its manipulation was under the personal direction of the Inspector General and does not appear in the annual reports, or statements prepared by the auditor of the service.

The question arises, whom does this surplus fund belong to? Members of the service say that as the moneys were originally appropriated for the payment of salaries, etc., Sir Robert Hart's economy deprived them of their rightful share, and therefore, the surplus accumulated belongs to the service and should be divided proportionately amongst its members.

The Chinese Government, however, holds to the point that all unexpended appropriations revert to the Treasury at the expiration of the fiscal year, the same as in any other country. But the funds are deposited to the credit of the service in a foreign bank, and China, having no control over the service, cannot touch them.

When the British Government exacted from China the promise that so long as British trade predominates in China, the Inspector General should be a British subject, Great Britain became sponsor for the official holding that position. To safeguard British bondholders, Britain secured a lien on the post of Inspector General of Customs. Who is to safeguard China's interests, if a large unused balance is permitted to accumulate, and the sum withdrawn from her jurisdiction? Mr. Algen's course of action, as the duly accredited appointee of the British Government to administer China's customs, will be followed with great interest.

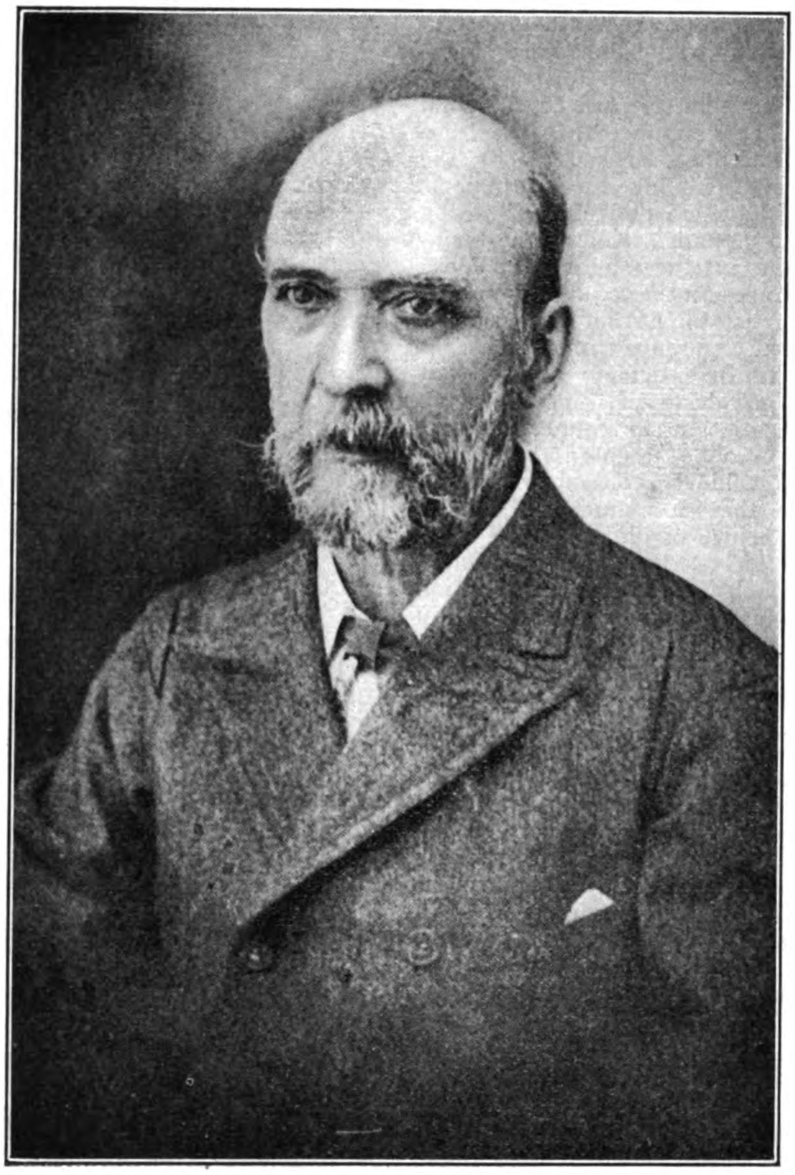
NEUTRALIZATION, EXTENSION, OR COERCION?

(Continued from page 1.)

So the situation to-day is that in 1934, twenty-four years hence, China may repurchase the line at its actual cost. But previous to this, in 1923, or thirteen years from date, the lease to the Liaotung peninsula, including the ports of Dalny and Port Arthur, expires. So half the life of this lease has already expired, and there is only twelve and a half years for it to run. As leases go, this is a comparatively short life, and unless it can be extended, or a promise exacted from China that she will agree to its extension in 1923, there is little inducement for Japan to embark on any grand scheme of development.

The development of Manchurian trade arising out of the enormous expansion of the bean market is an unexpected factor in the situation which brings China face to face with a crisis years before she anticipated it would have to be met. The growth of the bean exports to Europe has been so rapid that the railway and the port facilities are inadequate to handle the traffic. Japan must double track the South Manchuria Railway for its entire length, quadruple its car capacity, and enlarge the ports of Dalny and Port Arthur, to insure a hold on her legitimate share of the traffic and prevent its diversion to Vladivostok. And the railway improvements will be of no avail, unless, at the same time, the port facilities are increased to enable steamers to carry away the cargo.

Dalny harbor will have to be deepened, new breakwaters and wharves constructed, and improvements on a grand scale carried out, to place it in a position to cope with the development of the province. The limited facilities of the port are already taxed to the utmost to handle the traffic, and, as a temporary relief, Japan has opened the naval base at Port Arthur to trade for the purpose of making use of this slight additional increase in docking and loading facilities. The capacity of the wharves at Dairen is now calculated at 9,000 tons per day, and with the completion of the East Wharf, it will be about 17,000 tons. But as half of the berths must be reserved for the smaller coast steamers the export capacity of the present improvements will be much reduced. It requires no great stretch of the imagination to foresee the day when the Manchurian trade through the port of Dalny will reach a total of 5,000,000 tons per year. The improvements in the Fushun collieries, bringing the daily output up to 5,000 tons per day, or 1,750,000 tons per annum, will be completed within a year or so, and the product of the Pensihu Yentai and other mines will bring this total up to 2,500,000 within the next five years. The growth of the bean and grain trade may be expected to divert some 2,000,000 tons through the same outlet in the same space of time, and if another 1,000,000 tons are added for sundry imports and exports, the 5,000,000 ton limit is not far off. This means that the docks must handle at least 14,000 tons of freight every day, without any allowance for delays or demurrage or the many set backs which always occur to prevent the working out of an ideal system. So it is safe to assume that the capacity of the docks must be greatly increased and the harbor extended to embrace such improvements as will double the present capacity.



SIR ROBERT HART, BART.

The original Russian plans for the port of Dalny included the construction of five immense piers varying in width from 60 to 300 feet and from a quarter to half a mile in length, but only one of the piers and part of the second were actually completed before the war. Japan will be compelled to complete what the Russians initiated to keep pace with the growth and progress of the country.

But any elaborate scheme to provide ample facilities for the handling of the immense trade of Manchuria, ten years hence, requires an enormous outlay of capital. The improvement of Dalny harbor will entail the expenditure of many millions, and the natural question arises, where will Japan obtain the money, and on what security? The matter is one which admits of no delay; it must be faced and settled as soon as possible, or the railway will be the loser.

Harbor works or port bonds usually run for a long term of years with the receipts and wharf charges as security. When Japan turns to foreign bankers for a loan of several million sterling to be employed in the improvement of Port Arthur or Dalny, the first question will be "how about the lease?" European financiers, while entirely willing to advance funds for harbor improvements in the Leased Territory as long as Japan controls the property, would refuse to consider the proposition if China is to resume her authority in thirteen years. Terms, which might be granted to Japan, would not be extended to China.

It is safe to conclude that if Japan were to seek a loan to-day in the financial markets of the world for the improve-

ment of Dalny, the embarrassing question relating to the life of the lease would be immediately raised. If Japan could give an assurance that the lease would be extended, backed up by the consent of the Chinese Government, she would have no difficulty in raising the necessary funds. And as the financial success of the South Manchuria Railway hinges on the terminal improvements, it is plain that Japan must receive some assurance from China that the lease will be extended, in order that she may go ahead with necessary financial negotiations to secure the funds.

It may also be accepted that China will never willingly consent to an extension of the lease, and will employ every subterfuge of diplomacy to delay giving an answer to Japan on such a vital question. Japan is in the position that she must know now, or at least in a year or so, whether China will consent to a renewal of the lease. This is vital to her interests. She must have China's official assurance, to be in a position to raise the funds necessary for the improvements at Dalny and Port Arthur.

A clash is inevitable. China will refuse and Japan must insist. Japan may agree to confine the lease extension to the ports and permit China to re-establish her authority over the rest of the peninsula. At all events a crisis will arise. Japan must be able to produce China's consent to the extension to secure funds for urgent improvements. In the event of China's emphatic refusal to consider the question, Japan will be blocked and baulked in her purpose. Will she accept such an answer as final, or will she resort to coercion?

The issue is not one to be decided twelve years hence: the solution must come now. It is the question of the day between the two nations.

In view of this situation, which might readily lead to serious complications between the two empires, and the effect it might have on other interests in the East, the proposal of the American Secretary of State to neutralize the Manchurian railways is not so much of a diplomatic blunder after all, nor does it have that air of grandiose simplicity that some people profess to see in it.

G. B. R.

THE CHINESE EASTERN RAILWAY

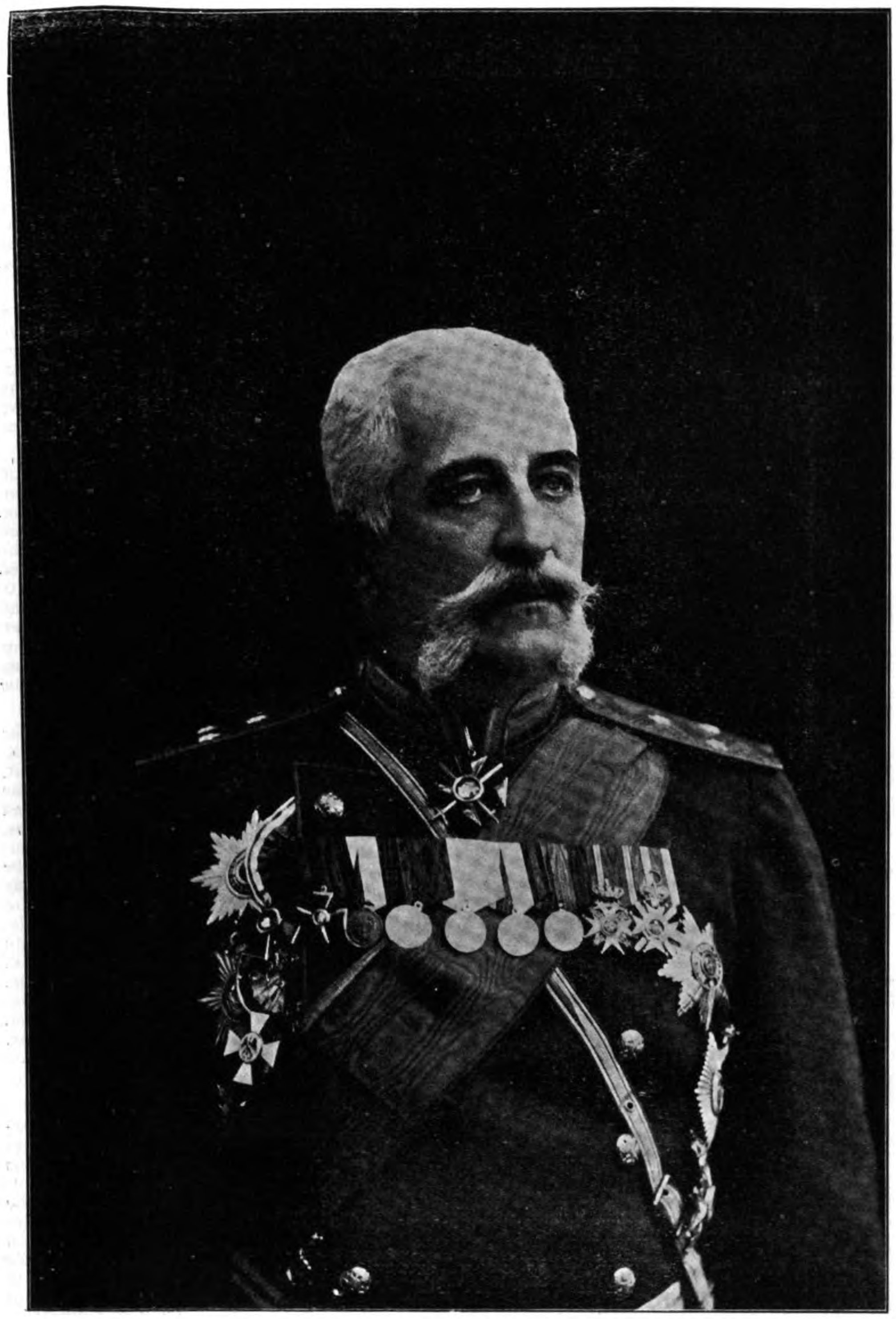
The following article from the *China Tribune*, a Japanese weekly published at Tientsin, sheds some further light on the leasing of Kwantung and the history of the financial affairs of the Chinese Eastern Railway:

"In 1896, Earl Li proceeded to Moscow for the purpose of assisting in the coronation ceremony of the Czar. Count Witte, who was waiting for the opportunity to obtain a remuneration from China for the services rendered by Russia in forcing Japan to return to China Liaotung Peninsula, skilfully managed to conclude a secret agreement with Li. Accordingly on August 27th, the same year, the contract concerning the establishment of the Chinese Eastern Railway Company, that is the Agreement to construct the said railway, was concluded between the Chinese Representative Hsu Ching Chen and the Representative of the Russo-Chinese Bank, to connect Chita on the Trans-Baikal Line with the Usuri Railway.

MAJOR GENERAL HOVARTH

CHIEF OF STAFF AND MANAGING DIRECTOR OF THE CHINESE EASTERN RAILWAY
THE DOMINANT FIGURE IN HARBIN

HARBIN: THE ADMINISTRATION BUILDING OF THE CHINESE EASTERN RAILWAY



LIEUT. GENERAL TSCHITAGOFF
IN COMMAND OF THE RUSSIAN RAILWAY GUARDS IN MANCHURIA

HARBIN: HEADQUARTERS OF GENERAL STAFF FOR TRANS-AMUR DISTRICT

C. E. RY. STATION AT IMJANPO

HARBIN: CONSULATE GENERAL OF RUSSIA

HARBIN: OFFICIAL RESIDENCE

"In March, 1898, a part of the Russian Pacific Squadron, under the command of Admiral Dovbasoff, entered Port Arthur and hoisted the Russian flag upon the hill at the harbour entrance. On the 15th, Russia forced China to sign the Treaty of Leasing the Kuantung Territory, and even secured, on June 24th, the concession to build a railway line across South Manchuria. In 1899, the Regulations of the Chinese Eastern Railway Co. were sanctioned by the Russian Government, and through the above mentioned agreement of the leased territory, guaranteed by the Russian Minister of Finance, a railway extending for 1,600 miles from Manchuria in the north to Tairen and Port Arthur in the south and Pogranichinaya in the east was built by Russians through the Eastern Provinces of China.

"In 1904, no sooner had the Eastern Railway been completed, the unfortunate war broke out between Russia and Japan, and as the result of the Portsmouth Treaty, the company lost the line southward from Kuanchengtze. In the autumn of 1906, the Usuri line, owned by the Russian Government, together with the railway running to the Sucheng Colliery, was let to the Chinese Eastern Railway Co. for a term of 25 years.

"Although the Chinese Eastern Railway Co. is legally a private corporation, in reality the railway is managed by the Russian Government. As it is, the capital is furnished from the National Treasury, and the line controlled by the Minister of Finance, receiving a large sum of money as subsidy from the Government every year. Unlike other government lines, however, the Chinese Eastern Railway does not receive any command from or intervention of the Minister of Communications, nor it is under the superintendence of the Board of Audit. Its management is left in the hands of the Head Office of the Railway Company at St. Petersburg, and its finance is controlled by the Minister of Finance through a special organ Audit Bureau of the Chinese Eastern Railway. In other words, the line is nothing but 'an enterprise undertaken by the Russian Minister of Finance, maintained in Chinese territory with the money disbursed from the National Treasury of Russia.'

"How much money did Russia spend for the construction and management of the Chinese Eastern Railway? We saw elsewhere stated that the sum paid out by the Russian Government amounts to four hundred million roubles, but accurate investigation reveals the fact that the sum expended for the railway really aggregatesthe fabulous amount of six hundred and sixty two million roubles in round figures, consisting of the following items:

1.	Unguaranteed Capital — Rbls.	5,000,000
2.	Bonds with the Guaranteed Interest of 4% (subscribed in 1897)	15,000,000
3.	Bonds with 4% interest (subscribed in 1898-1904)	351,000,000
4.	Interest at the time of construction, added to the capital	23,275,604
5.	Interest on the above	5,369,210
6.	Amount paid out during the Campaign, until 1909	98,451,000
7.	Damages incurred at the time of the Boxer Trouble	65,970,000
8.	Subsidies from 1906 till 1910	97,351,000
	Total — Rbls.	662,398,159

"Of the above, the fifteen million roubles mentioned in the Item Second were borrowed from the Russo-Chinese Bank. For the repayment of the same and the interest, 625,388 roubles are put down in the annual estimate. For the redemption of the bonds mentioned in the Item Third and the payment of the interest are stipulated by the Edict dated December 17th, 1901, but the amount to be thus paid out is not entered in the estimate, it being debited as a loan of the railway company against the National Treasury. If the company is unable to pay the capital and interest for the same, the National Treasury will pay 6% interest on it. The Items 4th and 5th are same as the 3rd, while the 6th, 7th, and 8th, bear no interest.

HARBIN: RESIDENCE OF LIEUT. GENERAL TSCHITAGOFF

HARBIN: KIRIN PROVINCIAL BUREAU, YAMEN OF TAOTAI SZE

H. E. SHIH SAO CHI

CUSTOMS TAOTAI AND CHIEF CHINESE AUTHORITY AT HARBIN.—GRADUATE OF CORNELL, 1901

"In five years, from 1906 to 1910, the amount the Russian Government disbursed (the amount for 1910 being the estimate) as subsidy for the Chinese Eastern Railway totalled ninety seven million roubles as previously stated. The following shows the annual disbursement in round figures: 1906, Rbls. 17,407,000; 1907, Rbls. 25,170,000; 1908, Rbls. 22,649,000; 1909, Rbls. 17,578,000; 1910, Rbls. 14,547,000, average per year being 19,472,000 roubles.

"It will be noticed that since 1907, the amount was gradually reduced, but still 14 million roubles are reckoned on during the current year, making the average annual expenditure in the last five years over 19 million. This expresses without saying much what a heavy burden the Russian Government is bearing on account of the Chinese Eastern Railway.

"When Russia built the Chinese Eastern Railway, which was commenced in 1898 and completed in 1903 spending four hundred million roubles, she was instigated by a certain ambition for political as well as economical matters in the Far East. The sum of about one hundred million roubles that she spent from 1904 to 1905 was for the transportation of troops and provisions in her supreme effort to crush down Japan during the disastrous campaign. But what object has the Government in having paid out 97 million roubles in subsidy in the last five years? What is she aiming at?

"The explanation is best furnished by the speech of Mr. Kokovtzoff at the Moscow Chamber of Commerce on his way to the Far East, last autumn. He stated, 'There was a time when the Chinese Eastern Railway was managed for political as well as commercial purposes, but at present there is only one object, commerce, for which we should work. To be more minute, (1) the Government intends to make the railway to serve as an organ of shipping Russian goods into North Manchuria, (2) to facilitate the transportation of Russian goods to Russian territories in the Far East and make the freight rate as cheap as possible, (3) to do its utmost for the importation of materials produced in China, which can be worked into marketable articles by Russian labour, and (4) to invite Chinese goods to be exported abroad to Vladivostock, so long as it does not harm Russia's interest.'

"No other object of running the Chinese Eastern Railway can exist beyond what the Minister specified; it is impossible to expect of this railroad anything which is outside of the commercial purpose. But when the fact that the railway company is losing 19 million roubles every year is observed, the actual condition of running it appears to be not in consonance with its object. Is this through unskilful management, or is it through the position of the railway being commercially disadvantageous?

"Let us first see how the railway company is managed. In doing so, it is necessary for us to examine the estimate of last year, before we proceed any farther.

"The main office of the Chinese Eastern Railway is at St. Petersburg, while the branch office is established at Harbin. The former is directly controlled by the Minister of Finance, and has about 300 assistants. Important questions are decided by the Directors, who

A TYPICAL STATION ON THE CHINESE EASTERN RAILWAY

OFFICERS OF THE MODERN DRILLED MANCHURIAN ARMY

number over 10. The Branch Office engages in transacting the actual business of railway administration under the instructions of the Head Office. Gen. Holwatt and about 2,000 officials compose the staff.

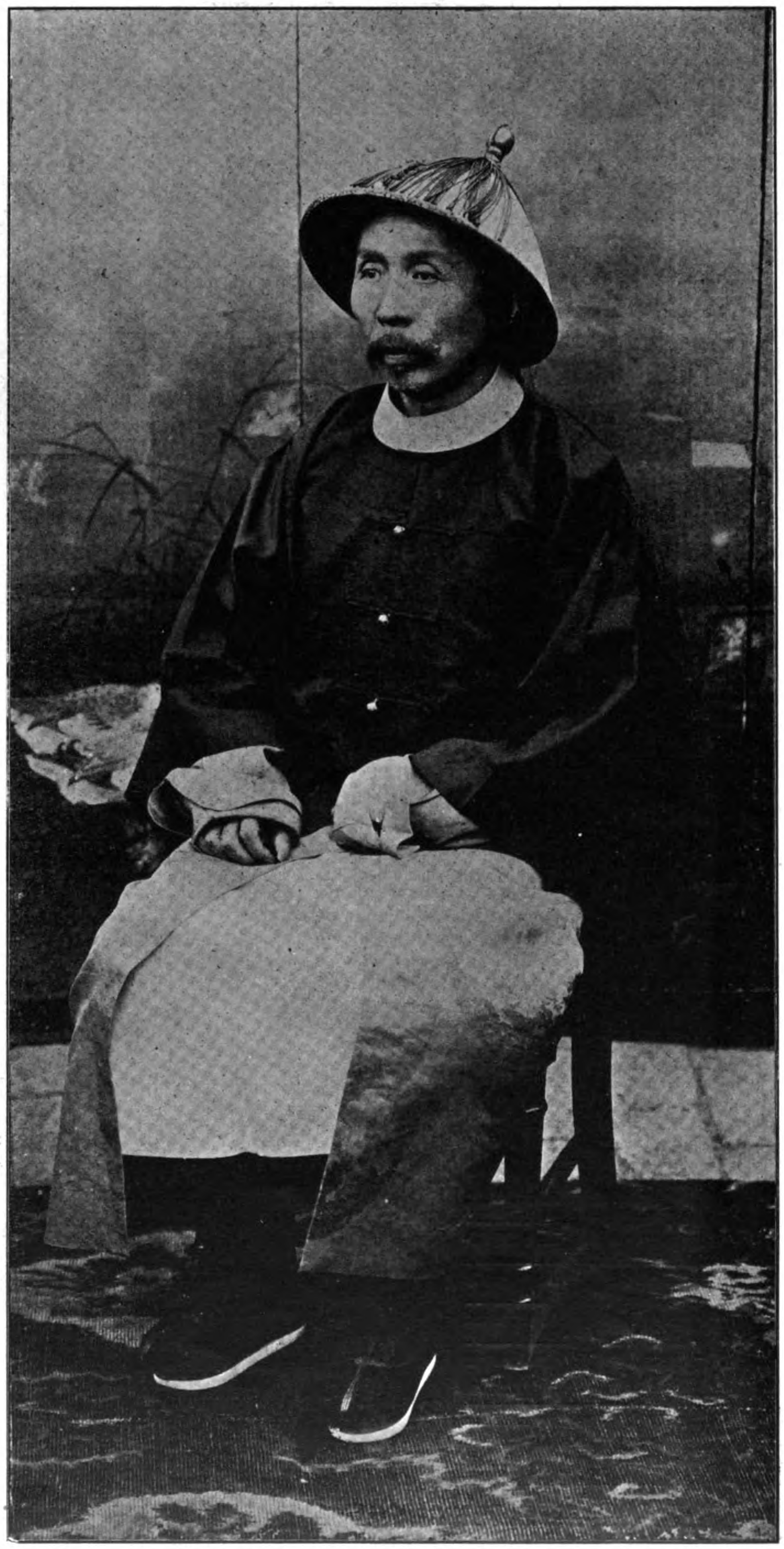
"The organization of both offices is similar to each other, but their authorities are widely different, the Branch Office having almost no power to carry out things without the instructions of the Main Office. But the latter, being established in a far-off place from the district where the railway exists, is not familiar with the actual conditions obtaining, and, therefore, the decision of the Directors is often found to be contrary to the actual interest of the railway. On the other hand, the Branch Office, being hampered by the Head Office, is unable to display enough activity. Thus, views are frequently expressed of late to remove the Main Office to Harbin as to be able to do away with the existing evils."

	Roubles.
1. Expenses at the Main Office, St. Petersburg	1,811,281
2. Expenses at the Branch Office, Harbin	1,837,337
3. Expenses for running goods and passenger cars	1,110,000
4. Expenses for Schools attached to the Railway	26,555
5. Expenses for Garrison Troops	9,828,000
6. Expenses for Civil Administration	1,522,260
7. Expenses for Courts	98,933
8. Expenses for Land Office	200,601
9. Expenses for Negotiation Bureau	231,668
10. Expenses for the Bureau of Line Preservation	3,621,037
11. Expenses for the Traffic Bureau	2,889,087
12. Expenses for the Bureau of Rolling Stocks	6,679,227
13. Miscellaneous Expenses	907,325
Total	30,763,011

H. E. CHENG-SHUN, DEPUTY MILITARY LIEUT.-GOVERNOR OF KIRIN

H. E. HSU SHIH-CHANG

FORMER VICEROY OF MANCHURIA IN THE UNIFORM OF COMMANDER-IN-CHIEF OF THE MANCHURIAN ARMY



H. E. CHAO EHR-HSUN

FORMER TARTAR GENERAL OF THE THREE EASTERN PROVINCES (MANCHURIA), NOW VICEROY OF SZECHUAN

RAILWAY STRATEGY IN CHINA.
THE KAIFENGFU-HAICHOW LINE

Shanghai, May 1st, 1910.—The Railway and Mining Concession exacted by Germany in her Kiaochow Convention with China stipulates in Article 1:—

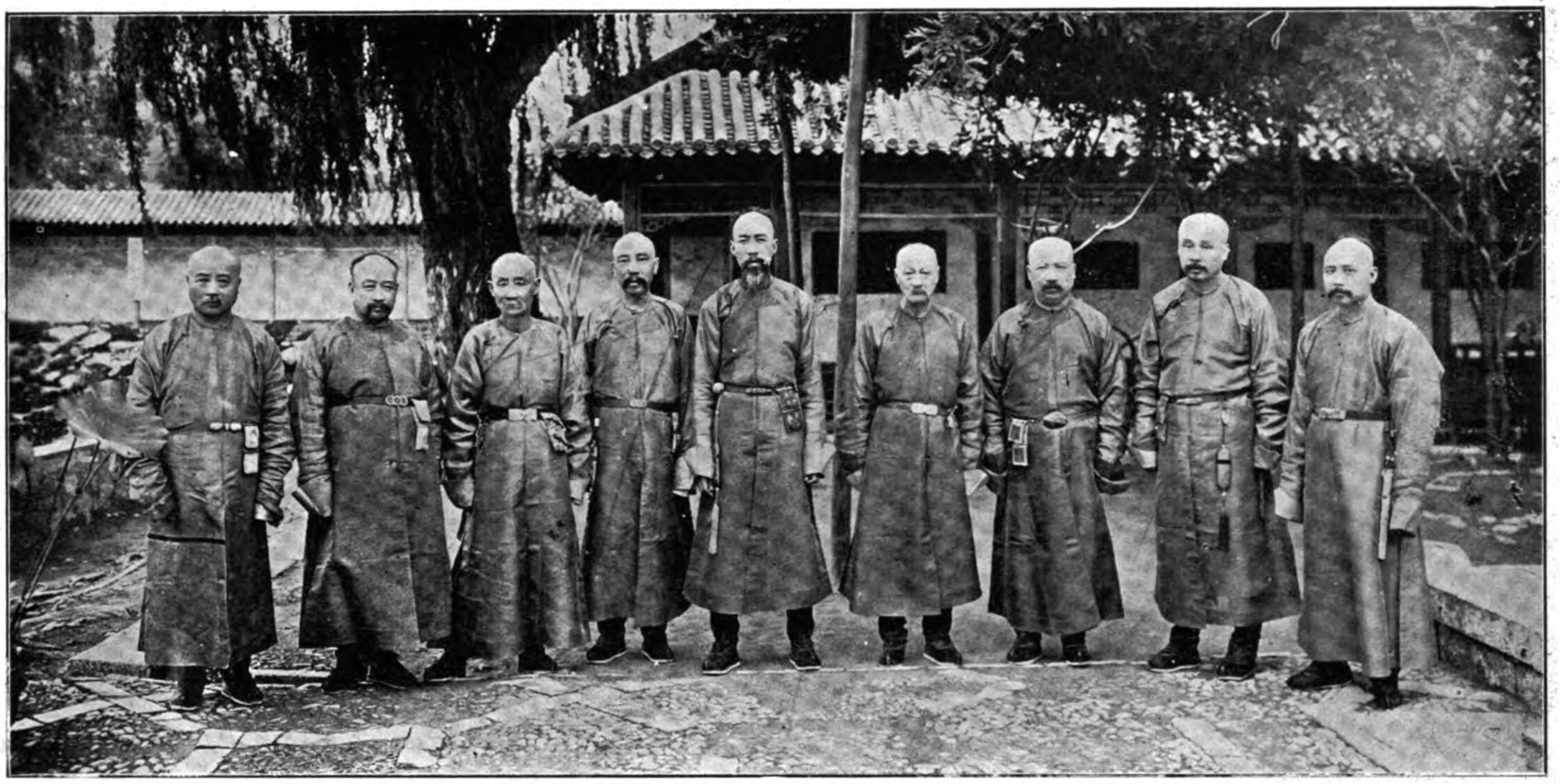
"The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinanfu to the boundary of Shantung province via Wei-Hsien. Tsinchow, Pashan, Tsechuen and Suiping. The second line will connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinan through Laiwu-hsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinan-fu to the provincial boundary shall take in enroute is to be determined hereafter."

In Article 4 it is also stipulated that "if at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese Government, or whatever Chinese may be interested in such schemes, shall, in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other Power are approached."

German railway rights in China, as defined by the Kiaochow Convention, thus include the road between Tsingtau and the provincial capital at Tsinanfu, and another line from Kiaochow to the boundary via Ychowfu, and thence northwards via Laiwu-hsien to Tsinanfu making a complete triangle in the preferred sphere. The line from Tsingtau to Tsinanfu has been built and is operating successfully, and the inner leg of the triangle is under construction, forming part of the German section of the Tientsin-Pukow railway. The outer line from Kiaochow to Yhsien has been surveyed, and estimates of construction prepared, but no work has yet been attempted, and the right to construct it is held for some future date, when conditions are more favorable. Although the Kiaochow Convention granted to Germany the right to the line from Tsinanfu to Yhsien or Chiningfu to be constructed with her own capital and operated as a German line, this concession was subsequently waived in the negotiations leading up to the signing of the Tientsin-Pukow Railway Loan Agreement. In order to secure the Chinese Government's guarantee to the Loan, the German bankers surrendered to China their rights to own and operate the line.

German authorities unite in predicting a great future for their port of Tsingtau, as with the construction of new lines extending beyond Tsinanfu into the interior, trade will be attracted to the port, which in time, it is hoped, will prove a formidable rival to Tientsin and Hankow. To bring this about, the Germans have advocated the construction of two important railways, and have used their best endeavors with the Chinese government to grant them the concession. A link connecting the terminus of the Shantung Railway at Tsinanfu with some point on the Peking-Hankow line would prove of immense commercial value to the development of Tsingtau, and a line from Tehchow, in northwestern Shantung, to Chentingfu on the Pekin-Hankow line, has been recommended by Germany. This would place Tsingtau in a position to rival Tientsin as the port for the immense districts of Shansi and southern Chihli, and owing to the fact that Tientsin is ice-bound for 4 months of the year, it would enable the German port to make a direct bid for the trade of the country even up to Peking and beyond.

The German program also includes the construction of another similar line parting from the Tientsin-Pukow railway, somewhere in southwestern Shantung, probably at Yengchow, passing through Tsining on the Grand Canal, and Tsaochowfu to Kaifengfu, the capital city of Honan province. Here it would connect with the existing Peinlo or Kaifengfu-Honanfu Railway, which is to be extended westwards via Tungkwan to Sianfu, from whence at some future date will start the important Trans-Asian line via Lanchowfu to Ili and Kashgar. This would divert to Tsingtau the trade of Central China and especially the coal export traffic of Shansi. Either of these projects would materially increase the prosperity of the German Shantung Railway and develop the port of Tsingtau. So Germany is looking far into the future, and in building the Shantung Railway, the road bed was made wide enough for doubletracks, although only a single line is now operated.



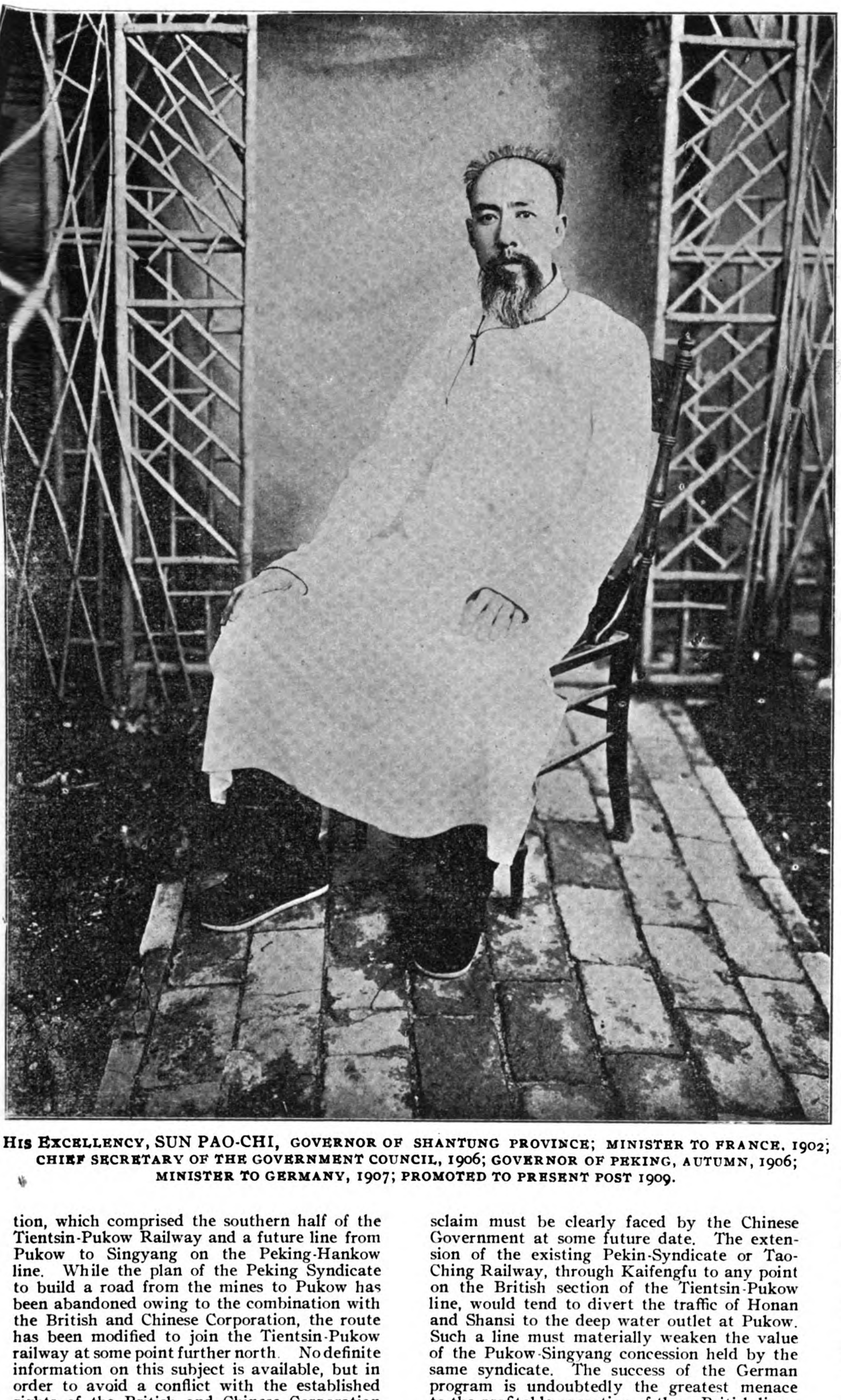
H. E SUN PAO CHI, GOVERNOR OF SHANTUNG (IN CENTER), AND THE LEADING PROVINCIAL AUTHORITIES

To the many overtures on the part of Germany to build these two important links, China has responded in the negative, but has promised that if foreign capital is called on China will apply to Germany for the loan. So while the concession is withheld, these projects may be considered as coming within the sphere of future German railway loans in China. With the German position in relation to railway development in this section clearly outlined, we may now turn to another phase of the situation which also has an equally important bearing on the railway problem of Central China.

The original mining concession of the Pekin Syndicate, in Clause 17, stipulates:—

"Whenever it may be necessary for any mine to make roads, build bridges, open or deepen rivers or canals, or construct branch railways to connect with main lines or with water navigation to facilitate transport of Shansi coal, iron and all other mineral products from the province, the Syndicate on reporting to the Government of Shansi is authorized to proceed with the works, using its own capital without asking for Government funds.

This clause was held on the part of the Peking Syndicate to cede to them the right to build a railway from the mines in Shansi, to tidewater. Their original scheme was to strike southwards towards Siangyang situated at the head of navigation on the Han River, thus finding a short outlet to the Yangtsze, but this was finally abandoned in favor of a route from the mines across 350 miles of country to the Yangtsze at Pukow. Their somewhat indefinite railway rights, which have been recognized by the Chinese Government, were afterwards merged with the concessions of the British and Chinese Corpora-



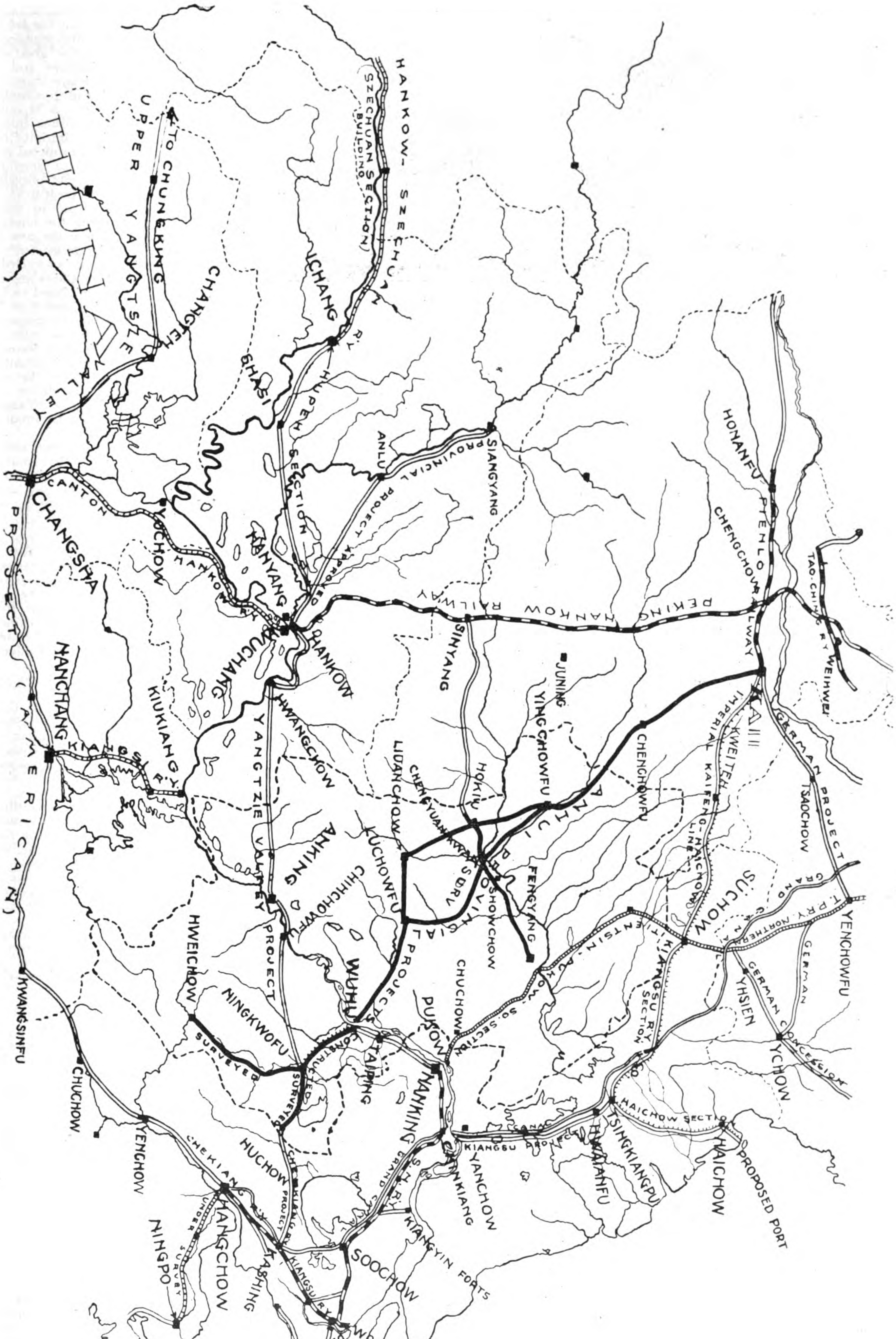
HIS EXCELLENCY, SUN PAO-CHI, GOVERNOR OF SHANTUNG PROVINCE; MINISTER TO FRANCE, 1902; CHIEF SECRETARY OF THE GOVERNMENT COUNCIL, 1906; GOVERNOR OF PEKING, AUTUMN, 1906; MINISTER TO GERMANY, 1907; PROMOTED TO PRESENT POST 1909.

tion, which comprised the southern half of the Tientsin-Pukow Railway and a future line from Pukow to Singyang on the Peking-Hankow line. While the plan of the Peking Syndicate to build a road from the mines to Pukow has been abandoned owing to the combination with the British and Chinese Corporation, the route has been modified to join the Tientsin-Pukow railway at some point further north. No definite information on this subject is available, but in order to avoid a conflict with the established rights of the British and Chinese Corporation it is probable the Peking Syndicate claim will embrace a route from the mines terminating at some point on the Tientsin-Pukow Line, further north than the Pukow-Singyang project. Such a line would, therefore, pass through Kaifengfu and join the Tientsin-Pukow Line at Suchowfu or Suchowan. As the Pekin Syndicate still holds these railway rights as a valuable asset, it can be readily recognized that their sclaim must be clearly faced by the Chinese Government at some future date. The extension of the existing Pekin-Syndicate or Tao-Ching Railway, through Kaifengfu to any point on the British section of the Tientsin-Pukow line, would tend to divert the traffic of Honan and Shansi to the deep water outlet at Pukow. Such a line must materially weaken the value of the Pukow-Singyang concession held by the same syndicate. The success of the German program is undoubtedly the greatest menace to the profitable operation of these British lines, as the Kaifeng-Yengchow extension would place Tsingtau in a most favorable position to compete with them for traffic in the same districts. So it is clear that the questions involved in any railway extensions, connecting the Peking-Hankow and Tientsin-Pukow trunk lines, are vastly important to British and German interests. The future of Tsingtau as a great port hinges on whether Germany can secure a western extension to her railways in Shantung, and the rights of the Pekin Syndicate and the British and Chinese Corporation are affected by any move tending to favor the German program

China undoubtedly appreciates the situation and is determined to avoid future complications. First and foremost her own interests demand attention, and the question of an open port on the North China coast under her exclusive administration is a paramount issue with her government. For it is a significant fact that China has been deprived of all the valuable ports situated on the northern stretch of her coast. Shanghai, the great commercial center of the Empire, is ruled by an International Council, and the central government has no control over its affairs. Tsingtau is held by Germany, Weihaiwei by Great Britain, Dairen and Port Arthur by Japan; this leaves to China the outlets at Newchwang, Tientsin and Chefoo. Newchwang as a port is worthless. Eighty years ago the spot on which Yinkow now stands was at the bottom of the sea, and it is now twenty miles inland from the mouth of the Liao River. The encroachment of the land on the Liao-Gulf is going on so rapidly that any port at the mouth of a river can never be depended on as a permanent outlet for trade. In addition, the Liao River at Newchwang is frozen over for at least four months of the year, and all commerce is checked until the thaw, and then only shallow draft coasting vessels can reach the town.

Chinwangtao is an artificial ice free port owned and operated by the Chinese Engineering & Mining Company. Tientsin which ought to be the great port for North China is handicapped by the same disadvantages as Newchwang, and any scheme of improvement embracing a large expenditure is only a waste of money. The silt carried down by the Haiho is so great that constant dredging is necessary to keep a channel open for light draft steamers. Large vessels have to lie off shore as far as nine to ten miles, so Tientsin as a port can never figure in any important scheme for the development of the Empire, or the advancement of a national policy.

There remains Chefoo which might be made a great Chinese port, but while the depth of water is ample, the harbor is open to the heavy northern gales, and a breakwater is imperative to make it safe for vessels during the winter season. But at the best, even after a large expenditure of money on improvement schemes, the harbor of Chefoo could only accommodate a very limited number of vessels. Chefoo's prominence as a port has rapidly declined since the opening of Tsingtau and the construction of the Shantung Railway. The trade of the province, which once flowed through Chefoo, has been diverted to Tsingtau, and the only hope of the port is the building of a railway which will terminate at some point on the existing Shantung Railway. It is quite clear that such a road would menace the prosperity of Tsingtau, and diminish the through traffic of the German line, and as it conflicts with German interests, must meet with their disapproval. Chinese promoters have several times endeavored to raise the funds to construct this line from Chefoo to Wei-hsien, but up to date have been unsuccessful. Under the terms of the Kiaochow Convention, if the Chinese desire foreign capital to develop the province, they must turn to Germany, and in view of the menace to her own interests, it is quite natural that she would withhold financial assistance to such a scheme. While the Chinese are free to apply elsewhere for aid in the event of German refusal, such action on their part would undoubtedly result in complications. The Chinese have gone so far as to openly state that German officials are decidedly opposed to the construction of this line and have threatened to use their power at Peking to break any official who encourages the scheme. This statement, however, is apparently without foundation, and must be accepted for what it is worth. The real difficulty in the execution of the scheme is the failure on the part of the Chinese to raise the funds themselves. At all events, Chefoo could never enter into any plan of the Chinese Government of building up a port under its own



RAILWAY MAP ILLUSTRATING RAILWAY STRATEGY IN CHINA.

GOVERNOR SEM PAO-CHI AND CHIEF PROVINCIAL OFFICIALS OF SHANTUNG AT A RECEPTION GIVEN BY THE GERMAN CONSUL AT TSINANFU

control, for as long as the Kiaochow Convention holds good, the proposed railway line will only have a local importance, and would be useless to China in the advancement of any broad national policy for the development of the Empire.

Weihaiwei, leased to Great Britain, has no future as a trade port. So it is quite clear that China is at present deprived of the only really good harbor on the Northern coast through which she could divert the great trade of the Central provinces. Japan holds the best habors for the outlet of Manchurian trade, and Germany occupies the port of Tsingtau, commanding the desirable trade routes from the sea to the great central provinces. If foreign railway programs are permitted full scope to develop, the logical sequence is that China will be forever barred from controlling a suitable deep water base for the furtherance of her own policy.

The situation outlined above is naturally one of vital importance to China, and it is interesting to note how she has solved the problem. Her move in the game, only recently announced to the world, is one of the most masterful pieces of political railway strategy yet recorded. By one simple line she effectively blocks the German program, nullifies the value of the British claims and opens for herself a port which will be under her own control. The deep significance of her move has apparently been lost sight of, in the general attention devoted to the Chinchow-Aigun project.

Some months ago, it was reported that the Chinese Government had opened the port of Haichow, a hitherto insignificant port in the north-eastern coast of Kiangsu Province just south of the Shantung border. This report, however, lacks official confirmation. The reason for such a step is now made clear by the imperial sanction to a scheme for building a railway from Kaifengfu, through Suchowfu, Tsingkiangfu and thence to Haichow.

Under date of March 8th, 1910, the Board of Communications memorialized the Throne on a railway project between Kaifengfu in Honan and Haichow, a seaport in the northern corner of the Province of Kiangsu.

According to the Memorial, the importance of this railway having been recognized by the Chinese Government, surveyors were despatched last spring to decide on the route to be adopted. The result of the survey was in favor of an early construction of the line, in view of the various advantages to be derived from the scheme.

Between Kaifeng and Suchow two routes were considered. One reaches Hsuchow via Chenliu, Kihsien, and Tangshan, while the other runs via Lanfeng, Kaocheng and Liukow, and along the old course of the Yellow River to Suchow. The latter, or northern line, running through a flat country, the cost of its construction will be less than the other route. But the southern line has the advantage of connecting the flourishing towns in the Province, and from the political and military point of view it is of more importance. It has, therefore, been decided to adopt this line. From Suchow there are three candidate lines to reach Haichow. The first is a straight line running eastwards via Peichow. The second is a line running in curve southeast to Hsuchien, thence turning to the north-east to make Haichow. The third line runs via Hsuchien to Chinkiang, from which place it turns northwards to reach Haichow. Of these three lines, the first is the shortest and least expensive one, but the construction of the Suchow-Chinkiang section having already been granted to the Kiangsu Railway Company, it is recommended that the third route should be adopted.

The cost of construction estimated, and the distances of each section are given below.

Kaifeng to Suchow, 560 li......	Tls. 6,700,000
Suchow to Chinkiang (this section to be built by the Kiangsu Railway Co.)	
Chingkiang to Haichow, 250 li..	3,000,000
Extension to the beach and harbor improvement at Haichow......................	2,800,000

Besides the above, there will be other minor items to be counted, and the total expense will amount to about 14 million taels, which, when compared with the other railways in China, is considered cheap, while the profits to be derived from this line will come next to the Peking-Mukden and Peking-Hankow railways.

Although the necessity of commencing the work as soon as possible is keenly felt by the Chinese Government, it is no easy matter for them to raise the funds required, without resorting to a foreign loan, which China does not desire at present. The surplus profits of the Peking-Mukden and Peking-Hankow railways having already been appropriated to the construction of the Kalgan-Kaihuacheng, Kirin-Changchun, Cheng-Tai, Taa-Ching, Pien-Lo and Shanghai-Ningpo lines, and other sources of income being also inadequate to meet with the fresh outlay of 14 million taels, the Board recommends that the work should be spread over several years, commencing it from more important sections of the line with such funds as are available for each year. By this means it is hoped to avoid any undue pressure being likely brought upon the financial resources of the Empire.

A glance at the map will show that the new line just keeps outside the German sphere of preferred rights in Shantung, so that opposition from that source cannot be fairly advanced, and its construction will effectively checkmate the German project to build a line from Yenchow to Kaifengfu. The map will also show that the new line, by connecting Kaifengfu with the Tientsin-Pukow at Suchowfu, obviates the necessity of the Peking Syndicate to extend its road in that direction, and in a measure it decreases the importance of the Pukow-Singyang project.

The new road will virtually be an extension of the existing Peinlo Railway, and will in time form the Eastern Division of the great Asian trunk line to Ili and Kashgar. The great volume of traffic from these regions, and from districts served by intersecting lines, will then be diverted to the new Chinese port of Haichow. With the connecting railways owned and operated by the Chinese Government, through rates can be made, which will draw the traffic to the new line and develop the new port The German dream of a greater Tsingtau is somewhat dispelled when the future of Haichow is thoughtfully considered.

China naturally advances the legitimate argument that the line is of immense advantage from a military and commercial viewpoint. In fact, she does not have to offer explanations as to her reasons for building the line, as it does not conflict with the treaty rights of other powers. The districts traversed by the line are the poorest and most desolate in China, subjected to periodical floods, which cause great damage to crops and originate famines and pestilence. Recent reports from Haichow state that famine is again upon the land, and thousands are dying of starvation and disease. A repetition of the great famine of 1906-07 seems imminent, and relief measures have been initiated by the provincial authorities. The proposed railway will enable the Government to ameliorate these conditions in the future, and provide work for thousands of wretched creatures, who must otherwise starve. So, hand in hand, politics and humanity are guiding the imperial authorities in the construction of the new line.

One of the most significant features of this move on the part of China is revealed by a close study of the map. From Chinkiang northwards to Haichow by the Grand Canal to Tsingkianfu is approximately 90 miles, and from here to the new port of Haichow via the proposed railway or the Yen river another 80 miles, or a total of 170 miles. The distance from Chinkiang to Shanghai via Woosung is about 160 miles or for all practical purposes the same. This really places Haichow in direct competition with Shanghai for the great Yangtsze River junk traffic, which carries no small portion of the products for export.

China has moved and cries checkmate to Britain and Germany. The game has been played fairly and above board, and the world will await with interest the next move on the part of Britain and Germany to regain their lost ground.—G. B. R.

Editorial Note.—Since Mr. Rea wrote the foregoing, the following paragraphs have appeared in the Chinese daily papers which point to the fact that China will not be permitted to build the road without protest from British and German interests. The same principle underlying the Chinchow-Aigun railway applies with equal force to the Kaifeng-Haichow Project.

The *North China Daily News* of May 12, 1910, says:

"It is reported that a loan of Tls. 1,800,000 will be obtained from the United States to build a railway from Kaifeng-fu to Chang-Chow, and Tls. 10,000,000 will be loaned from the British and Chinese Corporation for the same purpose."

From the *North China Daily News* of May 13, 1910:

"Negotiations are now proceeding between the Yuch'uanpu and a foreign syndicate for a loan of Tls. 20,000,000 to build a railway from Kaifengfu to Tsinanfu, but the bargain was not concluded as the Yuch'uanpu refused the syndicate's request that the line should be pledged as a guarantee of repayment."

From the *North China Daily News* of May 14, 1910:

"A report says that, as the French intend to invest capital in building a railway from Hsuchou to Haichou, the Germans oppose the proposition, as it is regarded as affecting German interests."

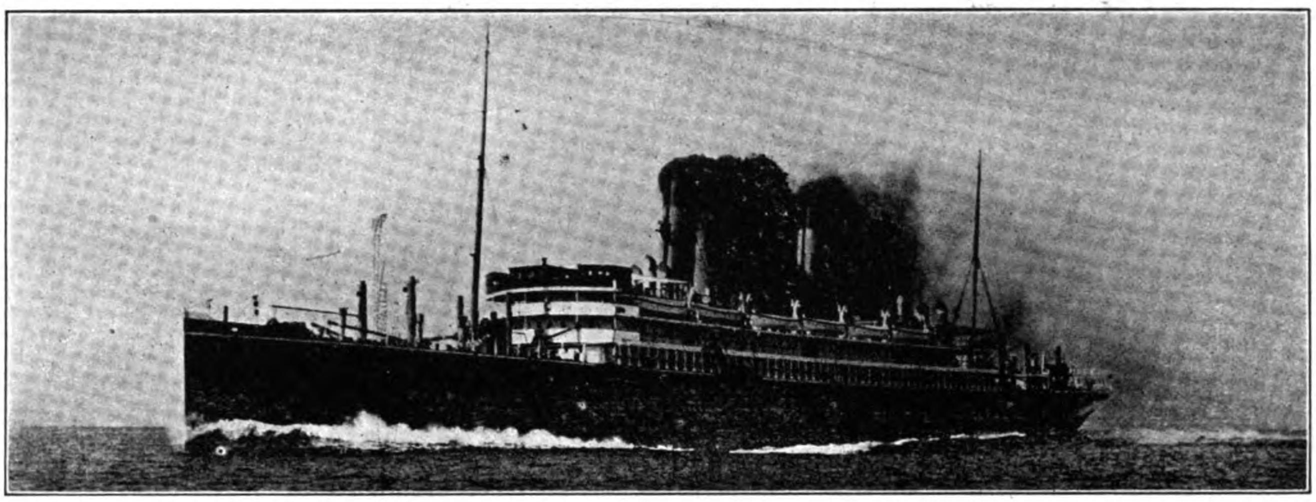
On April 26th, the Japanese paper at Dairen published the following telegram:

"Peking, April 26.—The Sino-American Syndicate has agreed to advance a loan of Taels 18,000,000 for the construction of the Kaifeng-Haichow Railway project."

As the Japanese have a peculiar way of securing accurate information of the inner workings of Pekin politics, long before other foreigners, it may be accepted that their news of April 26 was correct. If the latter news is also true, it indicates that British interests immediately entered the field for participation, and the second item also tells us that Germany, alive to the menace to her position, immediately proposed her old pet scheme of a line from Kaifeng to Tsinanfu, which would obviate the Chinese project. The last item of the 14th tells us that Germany has protested against the use of any foreign capital in the region of Shantung, although the proposed line is outside her recognized railway sphere. And here we have a repetition of the Chinchow-Aigun embroglio, with the European powers refusing to recognize China's right to build a railway in her country without their consent. How long will it continue?

New Steamers Built by the Mitsu Bishi Dockyard and Engineering Works, Nagasaki, Japan, for the Nippon Yusen Kaisha and Toyo Kisen Kaisha.

Great interest has been taken in maritime circles in the four new twin-screw steamers, the *Kamo Maru*, *Atsuta Maru*, *Hirano Maru*, and *Kitano Maru*, built for the Nippon Yusen Kaisha by the Mitsu Bishi Dockyard and Engineering Works of Nagasaki, Japan. These four vessels were designed for the European service of the company. The gross tonnage averages 8,500 tons.



S. S. "CHIYO-MARU"

TRANS-PACIFIC TURBINE DRIVEN PASSENGER STEAMER "CHIYO-MARU" FOR T. K. K.—Built and engined by the Mitsu Bishi Dockyard and Engine Works, Nagasaki, November 1908.—Length (overall), 570 feet 0"; Breadth, moulded, 63 feet 0"; Depth (shelter deck), 46 feet 6"; Gross tonnage, 13,426 tons; Displacement, 18.725 tons; Engines, Parsons' Three Shaft Arrangement; Boilers, Single Ended Scotch Boilers (13); I. H. P., 19,591; Speed, 21 knots. (This photo was taken on her full speed trials the 13th October, 1908)

The *Kamo Maru*, *Hirano Maru* and the *Atsuta Maru* were launched in 1908 and the *Kitano Maru* in 1909. The average speed of these vessels runs from 16.41 to 17.19 knots. The dimensions and other particulars follow:

Length between perpendiculars	465 feet.
Breadth, moulded	56 feet.
Depth	34 feet 6 in.
Gross tonnage	8524
Draught	27 feet 0¾ in.
Dead weight	9501 tons.
Speed	16.41.
Number of first-class passengers	32
Number of 2nd-class passengers	12
Number of intermediate passengers	138

Each vessel is fitted with a twin set of triple expansion engines, each set having a high-pressure cylinder 25 in. in diameter, an intermediate cylinder 41½ in. in diameter, and a low-pressure cylinder 69 in. in diameter, the stroke in all cases being 48 in., to work with a steam pressure of 200 lbs. per square inch.

The high-pressure cylinder is fitted with piston-valve, and the intermediate and low-pressure cylinders with slide-valves. The intermediate-pressure cylinder slide-valve is balanced, and is known as a square piston-valve. Dewrance's impermeators are fitted to the intermediate and low-pressure casing covers. The packing-rings for the high pressure and intermediate-pressure pistons are of the Ramsbottom type, provided with restricted movement. Packing for the low-pressure piston is of simple design.

All the working parts of the engine are made to standard gauge. They are of ingot forged steel, while the propeller shafts are of patent "Lockfast" iron. The propellers are right and left-handed, each with four blades, of Stone's manganese bronze, and fitted with a large elongated cone over the nut. After a series of trials the propellers proved highly efficient.

Box columns are adopted for supporting engine cylinders, one serves as a hot-well and air-vessel for the air-pump, while others serve as reservoirs for lubricating oil.

The condensers, which are separate, have strong cast-iron casing, with rolled gun-metal tube-plate, and tinned, solid-drawn brass tubes. The top of the condenser is specially shaped so that the exhaust steam from the engine flows uniformly all over the tubes.

The various auxiliary appliances include Edwards' patent single-acting air-pump, Weir's patent feed-heater and automatic pumps, circulating pump, feed-water filter, auxiliary condenser of Morison's "Contraflo" type, also pumps for sanitary purposes, for washing decks and fire-extinguishing, and for supplying fresh water for passengers' use. There are also bilge and ballast pumps. The distilling plant consists of one large evaporator, by Messrs. Weir, capable of producing from sea-water 40 tons of fresh water per twenty-four hours, and one distilling condenser having an output of 7,000 gallons of pure fresh drinking water per day.

The boilers are arranged in one compartment. There are six single-ended boilers. Each boiler is 14 ft. 3 in. in diameter and 11 ft. 6 in. long, and has three furnaces. The flues, which are of Morison bulb suspension type, have an internal diameter of 3 ft. 5 in. The boilers are worked at a pressure of 200 lb. to the square inch, and are on the Howden forced-draught system.

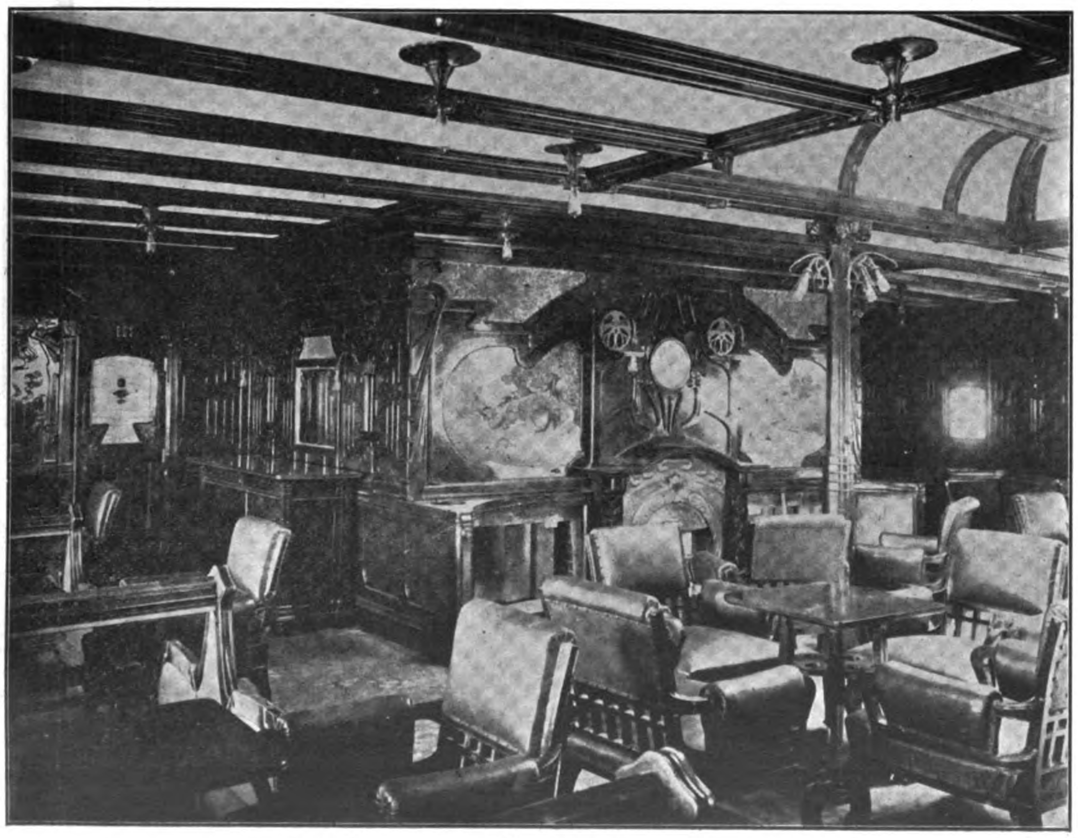
CHIYO-MARU LOUNGE

Each has one special high-speed single-cylinder double-acting engine of the open type, and is capable of working all boilers when the main engines are running at 5,500 indicated horse-power on service.

There is one large funnel, circular on plan, 12 ft. 9 in. in diameter and rising to a height of 110 ft above the keel of the vessel. The funnel is double, the space between the inner and outer funnels being utilised for ventilating the boiler-room and stokeholds. The provision for the disposal of the ashes has been made by fitting two powerful See's ash-ejectors, one in each stokehold, worked by a special donkey-pump.

DINING SALOON, CHIYO MARU

An interesting description is given in *Engineering*. The vessels are constructed generally of steel, to the highest class of Lloyd's requirements, and they are subdivided into eight compartments by water-tight bulkheads, with a cellular double bottom from stem to stern.



CHIYO MARU SMOKING-ROOM

There are six decks; these are known as the lower, the main, the upper, the bridge, the promenade, and the boat-decks. The lower deck is only at the fore part of the vessel, the next two decks—main and upper—extend from stem to stern, and the bridge-deck extends 178 ft. in the central part, having a poop 80 ft. long, and a forecastle 54 ft. long. Above this level there is, in the central part of the ship, the promenade-deck, 138 ft. long, and aft there is an aft boat-deck 56 ft. long. The boat-deck proper covers the entire length of the promenade-deck, with navigation bridge at the forward end. At the forward end of the boat-deck there are located under the bridge the wheel-house, chart-room, and captain's room. Abaft these is the light and ventilating-shaft for the main dining-saloon, and around it is sufficient promenade space for the use of officers. Ten boats are stowed on this deck in order not to interfere with the space on the promenade deck. The remaining boats are stowed on the aft boat-deck. All boats are fitted with Mill's patent instantaneous engaging and disengaging gears. At the aft end of the boat-deck there is the engine-room skylight, also the celestory skylight for the first-class smoking-room. The promenade deck is entirely alloted to the principal public rooms and to promenade space. There is a steel house extending almost the entire length with a broad and spacious promenade around it, yet under the cover of the boat-deck. The drawing-room and social hall occupy the forward end of the house, having a companion-way leading down to the bridge-deck accommodation. The mid portion of the house is taken by the boiler up-take and engine-room hatch. At the aft end there is a first-class smoking-room, 24 feet by 28 feet.

The bridge-deck is also entirely used for the first-class passenger accommodation. The deck-house, which occupies practically the full length of the deck, has on each side two-berth state-rooms, exceptionally capacious and lofty. At the fore end of the house there is a large well to the main dining-saloon on the upper deck below. This light and ventilating well has been ingeniously treated, and serves to add to the decorative effect. It pierces the deck above, through the drawing-room and social hall, and also the boat-house deck, terminating with an outer skylight on the top of the navigation bridge; but internally, at the boathouse level, there is a charmingly designed stained glass dome of highly decorative character. Abaft the well there is a main stairway leading to the promenade deck above and to the dining-saloon below. Ample natural light is provided in the way of the staircase by means of a large and handsomely designed trunk skylight. At the aft end of the house there is a companion-way to the smoking-room. The remaining space in this deck-house has been devoted to bath-rooms and lavatories.

The poop-deck is given over to the second-class passengers. There is a deck-house on the poop, having at the forward end the second-class smoking-room, and at the after end second-class cabins, the latter adjacent to the companion-way leading to the second-class dining-saloon and cabins below. One of the second-class cabins on the poop-deck is arranged so that it may be easily turned into a wireless-telegraph room. The forecastle deck is fitted with a strong breakwater, and carries the most approved equipment for handling the vessel safely and expeditiously.

The upper deck has a large number of cabins for officers and engineers. There is also the main dining-saloon forward of these rooms, with the first-class pantry immediately abaft it. Further aft there are more state-rooms, one of which is specially large and furnished superior to the other state-rooms, and may be styled a *cabin de luxe*. There is also a photographic dark room in this vicinity.

The galleys are located at the aft end of the bridge-house. Of this portion of the upper

deck, the starboard side of the ship is given up to the chief steward, purser, doctor, dispensary, barber's shop forward, and officers' rooms aft, and the corresponding cabins on the port side are arranged for officers and engineers' mess-rooms forward, and engineers' rooms aft, The first-class passengers' accommodation at the fore end of the house is divided off from these spaces by doorways, so that the officers and engineers are entirely dissociated from the passengers, and, moreover, the engineers are berthed near to their work. The location of the doctor's room and dispensary is particularly good, being convenient for all classes of passengers and crew. The barber's shop is between the first and second-class quarters. The deck hands are berthed right forward under the forecastle.

The dining-saloon and cabins for the second-class passengers, also cabins for junior officers and laundry, are under the poop.

The lavatories are fitted with the most approved sanitary arrangements, and instead of being arranged in large compartments, they are distributed throughout the habitable quarters. The floors are laid with black and white encaustic tiles. All the baths for the first-class passengers are of Victorian porcelain. The sanitary appliances are supplied by Messrs. Shanks and Co., Limited. The first-class state-rooms are fitted with patent berths, supplied by Messrs. Hoskin and Son, Limited.

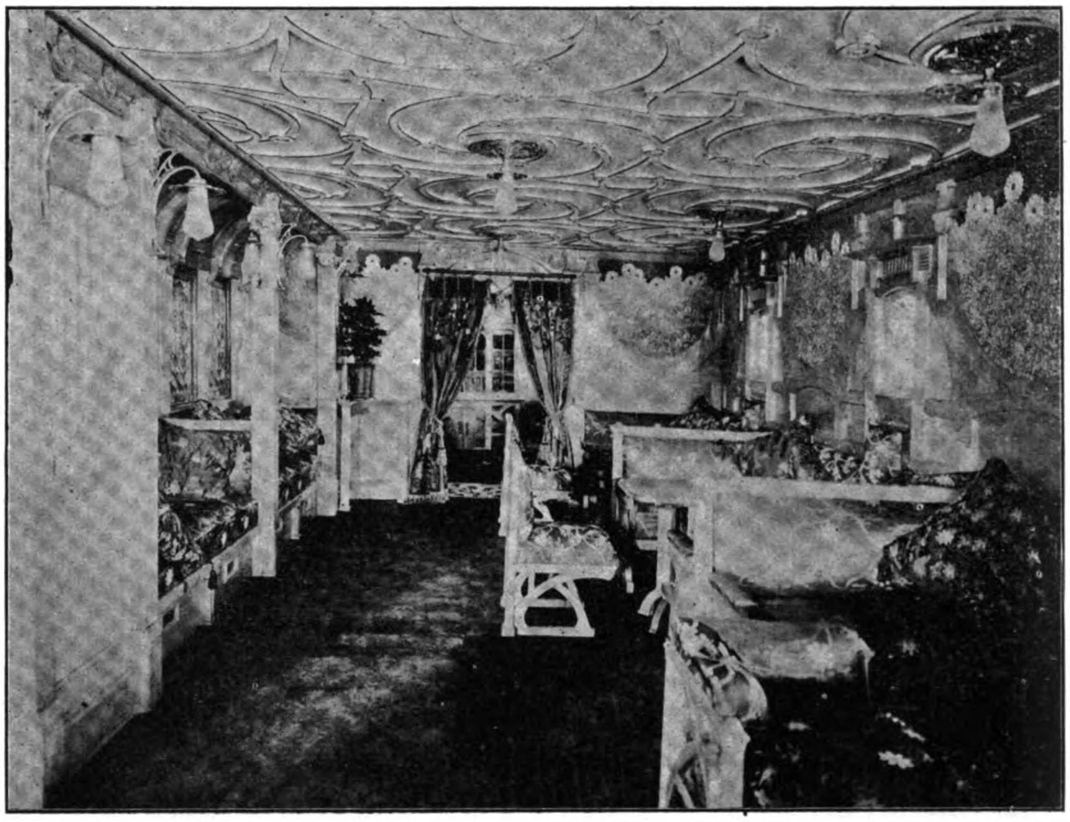
The intermediate and third-class passengers are accommodated on the main deck forward. The firemen and stewards are berthed aft on the same deck; thus the firemen may go to the machinery space or back to their sleeping quarters without passing by any part of the ship occupied by the passengers. Abaft the machinery-space a cold-chamber has been provided for providing the fresh provisions for the ship's *personnel*, and is quite distinct from the refrigerated holds for cargo. The chamber includes two meat-rooms, one fish-room, and one fruit and vegetable-room, and the total capacity is 2,800 cubic feet. The plant is capable of maintaining the temperature of the chamber at 26 deg. Fahr. when passing through the tropics with the machinery only working six hours out of the twenty-four. At the same time it can produce 3 cwt. of ice for table use. The plant was supplied by Messrs. J. and E. Hall, Limited. The remaining part of the main deck is given up to cargo, bunkers, silk-rooms, parcel-room, mail-room, baggage-room, and provision-rooms. The lower deck and holds are entirely given up to cargo.

The vessel is propelled by twin screws, and these are supported at the outboard end by a cast-steel spectacle-piece attached to the stern-frame. The shafting is contained entirely within the framing of the ship, and for this purpose the framing is bossed out in spectacle form. The stern-frame has a screw port, as in the single-screw arrangement, although the propellers do not overlap. This enables the projection of the propellers outboard to be minimized, and reduces the extent of the bossing out of the framing. It also conduces to speed. The stern-frames, spectacle-pieces, and rudders, as illustrated, were supplied by the Darlington Forge Company, Limited. The rudder is worked by a steam steering gear by Messrs. Caldwell and Co., Limited. This gear is placed on the upper deck under the poop, and actuated from the navigation bridge; it is fitted with Hastie's patent friction-brake. Hand-gear is also fitted at the rudder head on the poop as a stand-by.

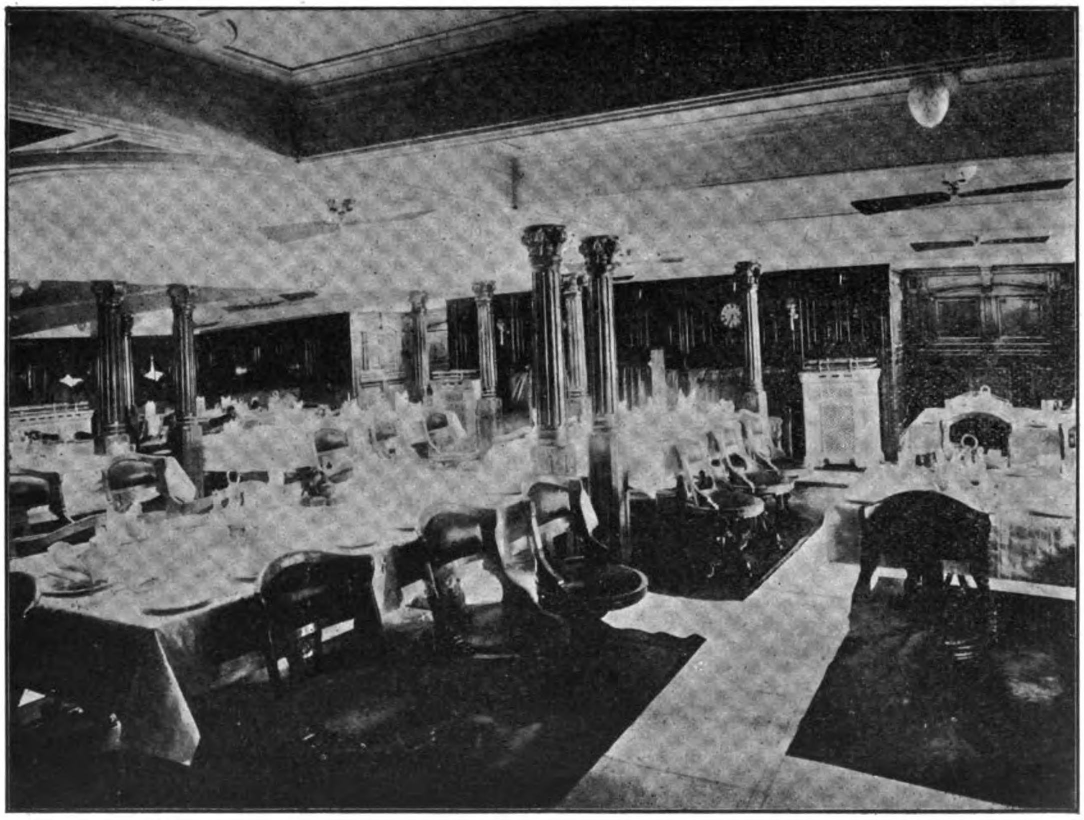
The scheme of the decorative features for all four ships was worked out on the same lines, with slight modification; the Kamo and Hirano are, however, exactly alike, as are also the *Atsuta* and *Kitano*. All of the decorative work was designed and manufactured at the builders' works.

The first-class drawing and social hall are adjacent to each other, and communicate directly with the main companion-way. The drawing-room is finished in white, relieved by pale-green silk panels, with autumn wild-flower design, and a panelled dado of polished white beech. The furniture is of white beech and maple, and the upholstery is of dark-green silk damask; the curtains and other hangings are also of dark green. The floor is laid with Wilton carpet of green shade. An Erard's grand piano occupies a corner in the drawing-room. The side of the well is decorated with art glass in nickel-plated frame-work. The social hall is treated in exactly the same way as the drawing-room.

The first-class smoking-room is treated in old Japanese style, moderated to suit European architecture. Stained oak is used throughout, and the floor is of interlocking rubber tiles. The upholstery is of dark maroon, and the hangings of Japanese tapestry of subdued and quiet brown shade, with a classic pattern. The roof is constructed in the clerestory style, with a large skylight having light-coloured stained



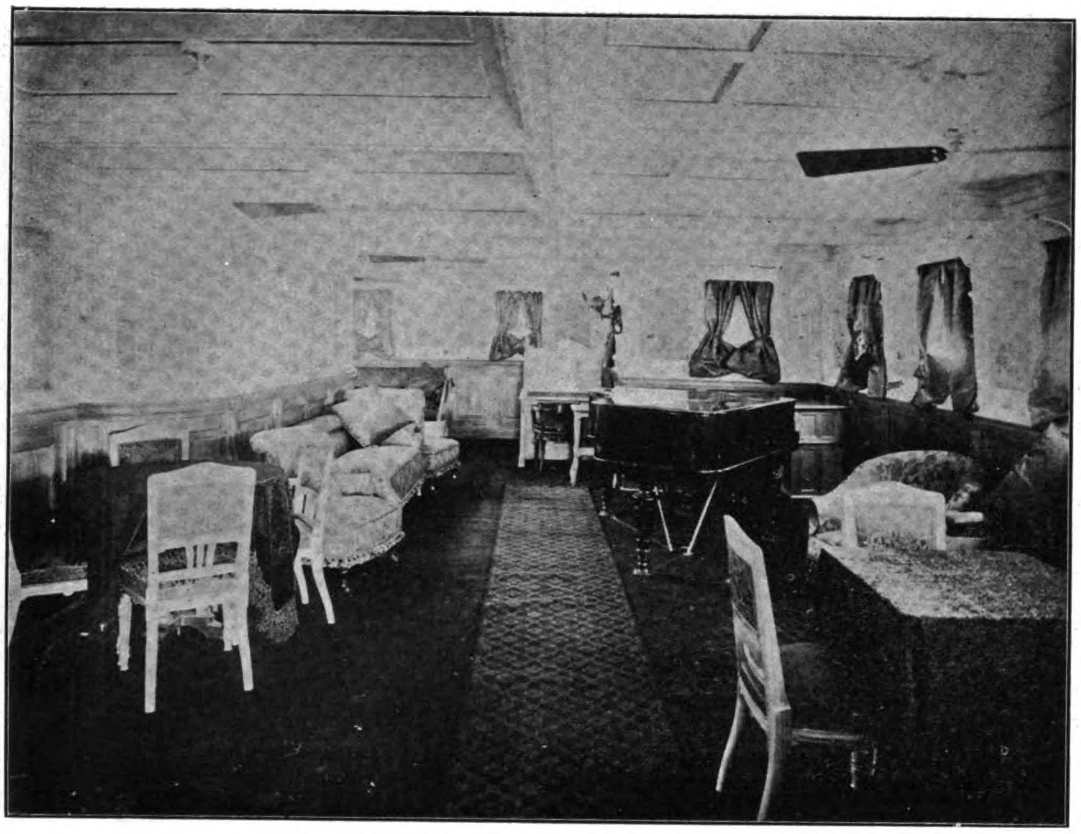
SOCIAL HALL, CHIYO-MARU



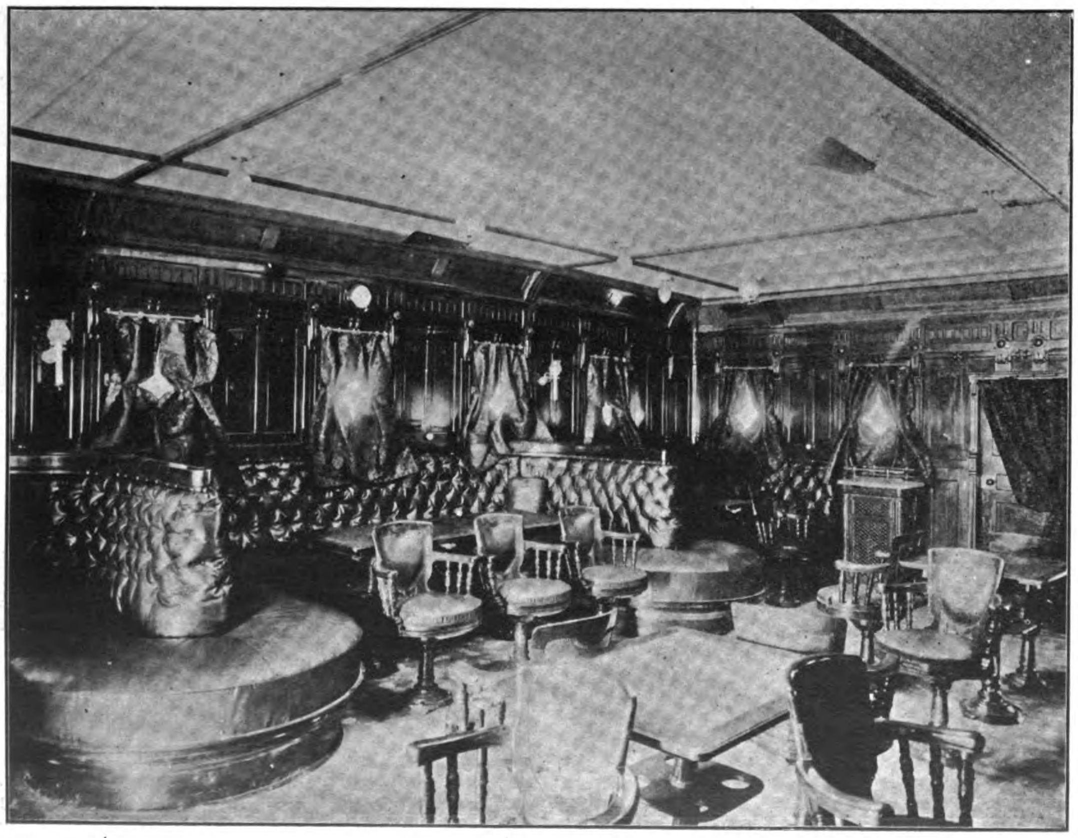
DINING SALOON, ATSUTA MARU

glass. The ventilation of the room by means of electric fans is very effective.

The first-class dining-saloon occupies the full width of the ship, and is 32 ft. long; seating accommodation is provided for sixty-eight passengers, so that all the first-class passengers may dine at one sitting. Only small tables are fitted, the largest being suitable for seven persons. The revolving seats have no arms, which increases the "elbow room." The feature of the decoration is its simplicity. There is an upright Erard's piano at the forward end of the saloon. Electric fans have been substituted for the punkahs over each table. The central well, while the main decorative feature, serves to facilitate ventilation, and has a length of 12 ft. and a width of about 9 ft. It has a stained-glass dome.



SOCIAL HALL, ATSUTA MARU



SMOKING ROOM, ATSUTA MARU

The vestibule on the promenade deck and entrance hall on the bridge-deck are panelled and framed in oak, and the floors are covered with neatly-designed interlocking rubber tiles. The stained glass work for the ships was manufactured by the Tokyo Stained-Glass Factory.

The electrical installation is comprehensive. The generating plant, located in the tunnel recess, includes two sets, each giving an output of 35 kilowatts when running at 300 revolutions per minute. The engines are of the self-lubricating type, and the dynamos are six-pole compound-wound. The current is transmitted by insulated cable of high conductivity, all wiring being done in double-wire distributing-box system. These machines, in addition to lighting the ship, provide current for driving fans. There are thirteen 36-in. ceiling fans in the first-class dining-saloon, five in the smoking-room, four in the social hall, four in the drawing-room, four in the second-class dining-saloon, and two in the second-class smoking-room. There are also fourteen 18-in. fans for the ventilation of the holds, and forty-two 12-in. bracket fans for the first-class cabins. Throughout the ship there are lights equal in all to 8022 candle-power, and in addition ten cargo lamps of 200 candle-power each, two arc lamps of 3,000 candle-power each, and one search-light projector of 16,000 candle-power. The main switchboard has nine circuits: six for the lighting of the ship, one for the fan-motors, and one for the search-light projector. The engines and dynamos, fan-motors, and all fittings for the installation are of the builder's own design and make, and were fitted complete on the ships by the builders' workmen.

As regards the telephone service, there is on the navigation bridge a telephone communicating with the engine-room, the look-out at the forecastle, and with the aft boat-deck for docking orders. The telephones are of a pillar type and of the loud-speaking marine pattern of Graham's make.

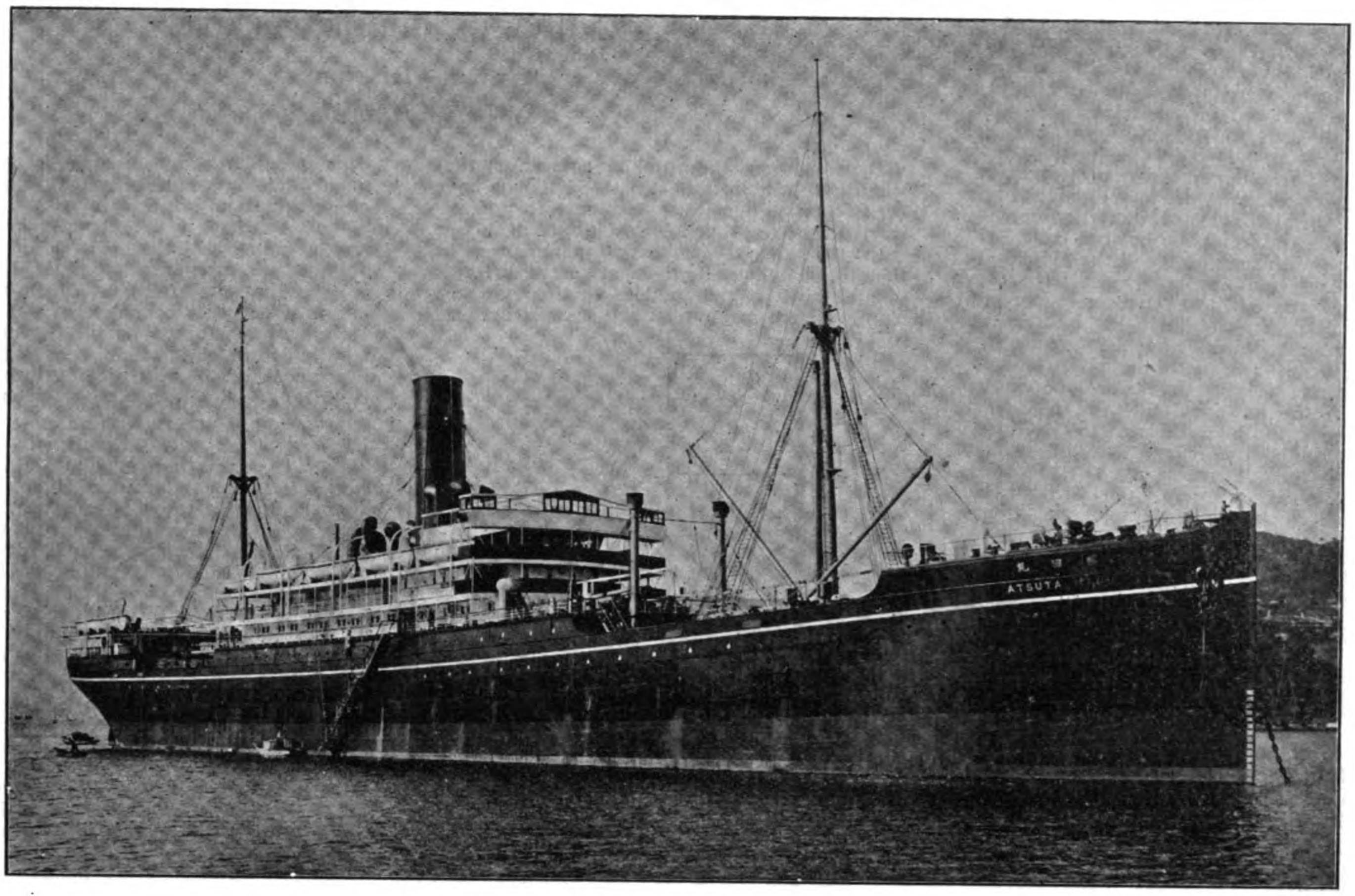
While the vessel is finished to first-class passenger steamer requirements, the cargo-carrying capacity of the vessels is of greatest importance in this line, and for dealing with the 6,000 odd tons of net cargo there are ten derrick cranes, four of which are capable of lifting 10 tons, and the others 6 tons. In addition to these there is fitted one special heavy derrick capable of lifting 40 tons weight. This derrick is worked by two 9-in. by 16-in. steam-winches working on one drum, and one hoisting winch for topping. Besides these winches there are eight steam-winches for working other derricks. All winches are of the builders' pattern and make.

The steam windlass with capstan is by Messrs. Napier Brothers, Limited, and is fitted with the makers' patent self-holding brake. One steam warping capstan by Messrs. Clarke, Chapman, and Co., is also fitted on the poop.

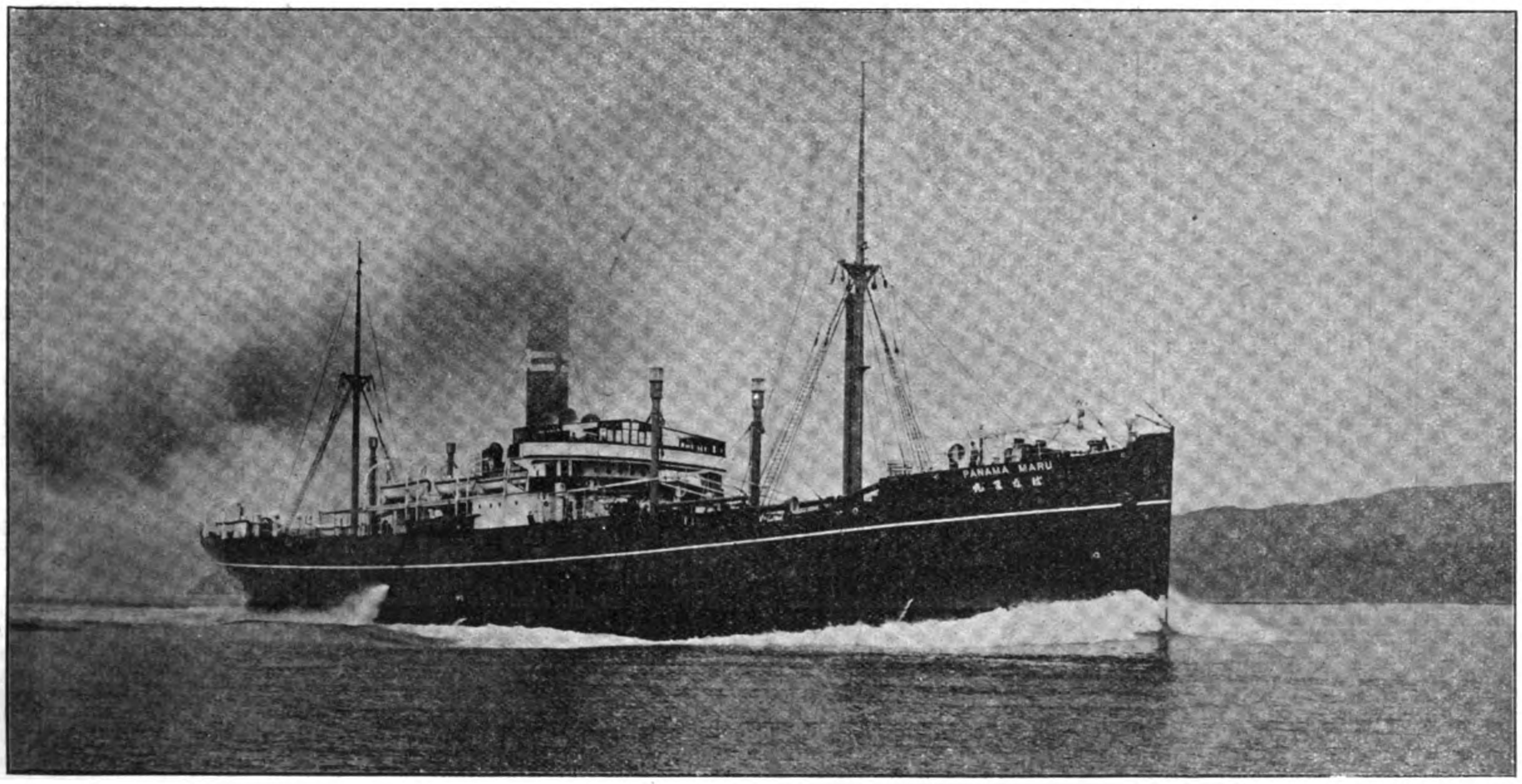
The ship's telegraphs were supplied by Messrs. Chadburn and Son.

A complete system of water supply is distributed throughout the ship, maintaining the continuous supply of cold fresh water, and hot and cold salt water, not only to all the sanitary quarters, but also to various galleys, pantries, sculleries, etc.

The history of the Nippon Yusen Kaisha has been a remarkable one. During the last fourteen years, twenty-four vessels with a tonnage of from 6,000 to 8,500 each have been added to its European and American service. The Nippon Yusen Kaisha was practically the outcome of the amalgamation of the Union Transportation Company and the Mitsu Bishi Mail Steamship Company in 1885 under Government patronage in the shape of a guarantee of an annual dividend of ten per cent to the shareholders. The Government reserved the right to nominate the chief officers of the company, but in 1893 the passage of the commercial law eliminated the government influence from the management. At this time the operations of the company were confined largely to coastwise trade and to China ports. Later the company extended its operations to India. When the war broke out practically all the steamers of the Nippon Yusen Kaisha were placed at the



S. S. ATSUTA MARU IN NAGASAKI HARBOR



S. S. PANAMA-MARU.—First of three sister-ships being built at the Mitsu Bishi Dockyard & Engine Works, Nagasaki, to the order of the Osaka Shosen Kaisha for its American Service.—Principal Dimensions:—Length, 400′ 0″; Breadth, 51′ 0″; Depth, 32′ 6″; Speed attained at her trials, 15 knots. Type of Engines:—1 set Triple Expansion Engines; Boilers, 4 Single Ended Scotch Boilers fitted with Howden's Forced Draft. Passenger Accommodation:—1st Class 8, 3rd Class, 180.

disposal of the government where they remained until the close of the war in 1905. During this time chartered vessels were employed in taking care of the China and Indian trade. When the vessels of the Nippon Yusen Kaisha fleet were returned, the government paid the company a bonus of yen 2,500,000 and of this yen 2,000,000 was placed in a special reserve for increasing the fleet by the addition of modern vessels. The initial step in the program was the placing of an order for six new steamers of 6,000 tonnage each. One was ordered from the Mitsu Bishi Dockyard and Engineering Works at Nagasaki and the balance from British yards. With the passage of the Shipbuilding and Navigation Encouragement Laws this number was increased to twelve vessels, two of which were built by the Mitsu Bishi Dockyard and Engineering Works and the balance by British builders. The last of these were launched in 1899 and since that time twelve more have been added, the last four and most modernly equipped being the *Kamo Maru, Hirano Maru, Atsuta Maru* and the *Kitano Maru* to which this article refers Of these last twelve added to the fleet, nine in all were launched from the Mitsui Bishi Dockyard and Engineering Company

As evidence of the growth of the Nippon Yusen Kaisha may be taken the increase in size of the fleet under its control during the last twenty-five years from a small aggregation of coastwise vessels to an aggregate of over 300,000 gross tons. The capital is now yen 22,000,000 with a reserve fund of yen 10,000,000.

In all cases the full-speed trials were run on the measured three-mile Government course outside of Nagasaki Harbor, under the supervision of the Government officials. The following table gives the results of those runs:—

Mean Results of Full-Speed Trials of "Kamo Maru," "Hirano Maru," "Atsuta Maru," and "Kitano Maru."

	"Kamo Maru."		"Hirano Maru"		"Atsuta Maru."		"Kitano Maru."	
Number of Runs	16-6-1908		16-11-1908		15-2-1909		12-4-1909	
	Speed.	Revs.	Speed.	Revs.	Speed.	Revs.	Speed.	Revs.
	knots		knots		knots		knots	
1 down.....	16.554	93.	16.510	93.25	16.687	98.25	17.053	96.
2 up.....	16.284	93.5	16.621	93.25	17.387	97.75	17.218	97.25
3 down.....	16.594	93.5	16.532	93.75	16.710	98.25	17.194	97.38
4 up.....	16.467	93.5	16.598	93.75	17.314	97.75	17.266	97.
5 down.....	16.105	90.5	16.598	93.50	16.621	97.5	17.030	96.
6 up.....	16.084	90.25	16.554	93.75	17.266	97.5	17.194	96.25
Mean of Means.	16.41	.....	16.57	.....	17.	.....	17.19	.....

It will be seen that the performances of all the ships were exceptionally favourable and satisfactory. In service the four vessels have proved themselves most economical in working and have given every satisfaction to the owners.

DYNAMIC FLIGHT

By GEORGE GORDON BLACK

PART 2.—HISTORICAL

(Continued from April.)

It is a curious thing in this connection that whereas fish, ships and dirigible balloons have been found to offer least resistance to progress when they are propelled in a direction in line with their length, birds and aeroplanes, on the other hand, are formed so that the direction of motion is at right angles to their greatest length. Here again we have a constructional

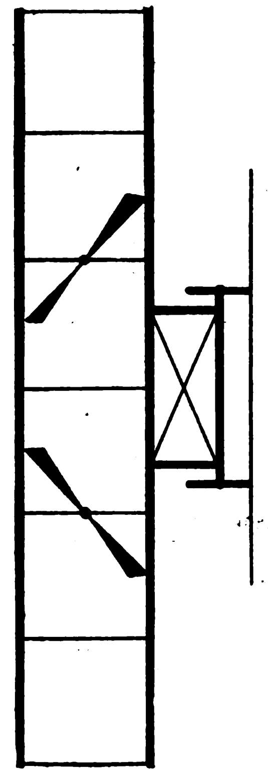


FIG. 2.—FRONT ELEVATION OF SUPERPOSED BIPLANE

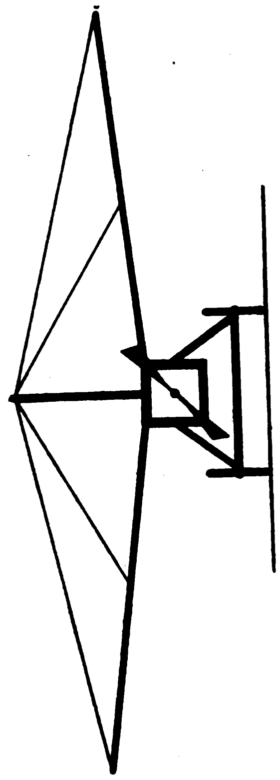


FIG. 1.—FRONT ELEVATION OF MONOPLANE

point that is not fully explained. The consensus of expert opinion would appear to indicate, however, that in a plane form which has very great depth in comparison with its entering edge the difference in air pressure between the upper and lower surfaces sets up a greater loss of energy than is the case with a wide span plane. Further, if the plane is made deep—and assuming that the greatest lifting effect is obtained in proximity to the front edge—it is clear that the after part of the surface will obtain little or no benefit from working in the air already disturbed by the forward part—in addition to which it will, of course, increase the resistance of the plane to progress through the air.

The actual amount of lift that can be obtained from an aeroplane varies in almost direct proportion to the angle at which it attacks the wind. Of course there is a limit but at any angle between 1 in 5 and 1 in 20 Maxim has proved that the lifting effect will be just as much greater than the drift as the width of the plane is greater than the elevation of the front edge above the horizontal—that is to say, if an aeroplane is set at an angle of 1 in 10 and 1 lb. pressure is employed in pushing it forward the lift will amount to 10 lbs. If the angle be changed to 1 in 16, the lift will be 16 times as great as the drift.

On first thoughts it appears that the correct thing to do is to set the plane so as to give the greatest lifting effect, but further consideration shows that by increasing the angle the resistance is also increased and greater power is required for driving the machine. A compromise must be arrived at therefore and observation of existing machines shows that the average angle is about 1 in 10.

Again, the supporting power of aeroplane surfaces set at small angles can be very much increased by accelerating their velocity for double the speed gives four times the lifting effect. In consequence of this the total plane area may be considerably modified by increasing the speed. Inversely, slower flying speeds can be obtained by larger supporting surfaces.

PART 3.

In the previous article of this series I referred briefly to the cross-sectional form of plane surfaces, their angle of incidence and the question of speed in relation to weight-carrying capacity. We have now to consider the reasons for disposing the surfaces in the various familiar and characteristic forms.

Modern aeroplanes are divided into several groups each of which is known by a descriptive name that, in itself, signifies a number of surfaces and their relative positions. Thus we have the monoplane (Fig. 1), the superposed biplane (Fig. 2), the superposed triplane (Fig. 3), and the tandem biplane (Fig. 4), while in addition there are numerous combinations of plane surface distribution which may be termed just as the reader pleases. Those mentioned, however, represent the machines in the order of popularity.

From a purely mechanical point of view there appears to be no objection to dividing the total supporting area into a number of parts—providing that certain fundamental conditions are not overlooked—and hence the matter resolves itself into a question of convenience. A certain minimum area is essential and this quantity varies according to the speed at which the machine is designed to run. Supposing that an aeroplane is of 600 square feet surface and lifts a total weight of 1200 lbs.—2 lbs. per sq. ft.—at 35 miles per hour, it would obviously be impracticable to construct it with a single span of 100 feet by 6 feet deep. It is much more convenient to build it in two spans of 50 feet by 6 feet placed one above the other If, however, the same weight was required to be transported and the speed could be raised to 70 miles per hour, an area of 30 feet by 5 feet—not calculating increased resistance—would be sufficient and it could be made in one span only.

In superposing plane surfaces or placing them tandem fashion there is a factor of air disturbance introduced that must be compensated for, otherwise one of the surfaces will be affected by the displaced air from the other and its lifting power reduced correspondingly.

It is evident that the air, at the rear edge of a plane surface moving rapidly through the atmosphere, is deflected downwards at a considerable velocity and imparts in consequence a certain amount of resistance to the passage of another plane if placed in close proximity. To overcome this difficulty the underneath plane must be set at a more acute angle than ts fellow in order to give an accelerated speed to the air on which it is being supported and thereby obtain a greater lifting effect. The ame remark holds good for tandem planes which are in even a worse position since the rear surfaee must necessarily be working on the "backwash" of the front one. The difficulty increases also with the number of planes used, hence it would appear desirable to reduce the surfaces to the minimum quantity and, in the case of superposed biplanes and triplanes, to place them as far as possible apart. Observation of existing machines shows that the average distance between the planes is equivalent to their depth.

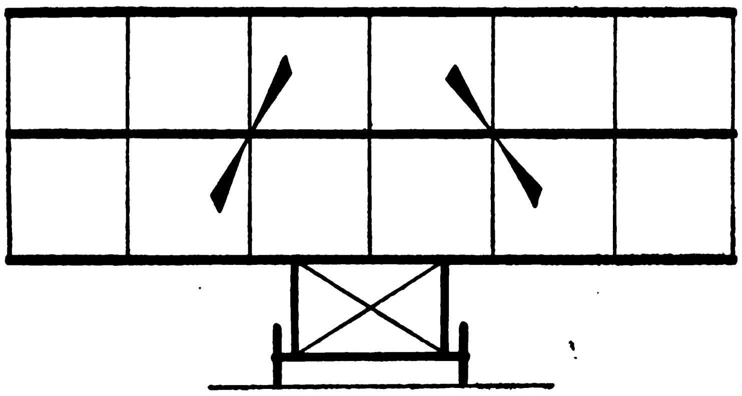


FIG. 3.—FRONT ELEVATION OF SUPERPOSED TRIPLANE

Such problems require to be worked out to suit the purposes of individual machines, the main point to be remembered being that the load carried bears a fixed relation to the length of entering edge—if we require to double the weight-carrying powers of an aeroplane its entering edge must be twice as long. At the same time a similar effect can be obtained by increasing the velocity since the additional impetus given to the air will impart to it a greater amount of weight-carrying power. According to Maxim double the speed gives our times the lifting effect and consequently the greater the lifting effect in proportion to the power employed.

This reference to velocity now raises an interesting point in connection with engine size. It is a curious fact that there is a certain speed to which every aeroplane can be driven, but beyond which no effect is obtained by increasing the output of the engine except to lift the machine. In the previous notes I have endeavoured to make it understood that angle of incidence is the factor upon which speed more or less depends. As the speed rises the angle decreases until at its highest flying speed the machine assumes an almost horizontal position where the centre of pressure on the plane is very near the front edge. If the aeroplane was forced beyond this critical point the centre of pressure would creep right to the front edge and then over it onto the top surface causing the machine to take a dive—which would possibly end disastrously as the pilot has no means of correcting it. If the engine speed is simply increased and the machine allowed to take its own course the natural effect is that the planes, having already reached the limit of their practical flying angle, will be forced upwards by the banking of the air. Of course—if the driver is addicted to that particular form of amusement—he might hold the machine's head down by manipulating the elevating rudder, but, as I have already pointed out, the only result of such a manoeuvre would be to cause the centre of pressure to change to the top of the plane and the aeroplane would drop like a stone.

Stability.

Undoubtedly the crux of the whole of the aeronautical question lies in the matter of stability, and on no other point is there such a divergence of opinion even amongst the recognized authorities. Consequently "where doctors disagree" the present writer will confine himself to stating general principles only without hazarding any persbnal opinions.

Considering that longitudinal and lateral stability are affected only by wind variations, it would be possible to obtain natural stability of an aeroplane if a speed could be obtained that was greater than that of any natural current. For this Lanchester says that 90 miles per hour would be sufficient. The weight of a machine capable of travelling at this pace would be very great and it is calculated that its momentum would be sufficient to carry it safely through adverse winds. At the moment, however, this is not practicable, in addition to which there are very few people who have any particular desire to fly at such a speed—so we must consider the matter from the present point of view. Automatic stability is a very big problem and it does not appear in the least likely to be solved for quite a long time to come. In the meantime the next best thing to waiting for its arrival is to construct machines as inherently stable as possible and depend on human skill for the rest.

Inherent stability in the line of flight may be attained to a certain extent by affixing a tail at some distance behind the main planes (Figs. 5 and 6), its effect being to damp any small oscillations caused by speed or wind variations. Whether a device of this kind is really an advantage or not is a matter of opinion since it must necessarily slow the machine, but at the same time as the oscillations take a longer time to affect the balance the driver has more time to think and act. The French school of thought favours a combination of tail and hand-controlled devices, but the American school (headed by the Wrights) prefer to depend on hand control entirely.

This hand control takes the form of a small horizontal plane fitted, on biplanes, in front of the machine (Fig. 5), while on the monoplane type of craft it is arranged beside the tail (Fig. 6). The amount of leverage obtained varies, of course, in proportion to the distance it lies from the centre of lifting effect but, as the strain on the small plane is very considerable, the struts holding it down must necessarily be made very strong and heavy. The elevator has the work of carrying the weight of these struts and consequently a definite limit is imposed on its distance from the main planes.

When pointed downwards the elevating rudder offers sufficient resistance to the air to drag the nose of the machine downwards, while in the opposite position the aeroplane tends to rise.

The lateral stability can also be rendered automatic to a limited extent by setting the two halves of each single span at a slight dihedral angle (Fig. 1). When a machine so equipped heels over the lower of the two sides sets up a greater amount of resistance to the air than the higher side and there is a distinct tendency for it to right itself—the action being somewhat similar to that of a boat when it rolls. A hand trimming device is necessary however and usually consists of a pair of small planes attached to the main wings and capable of movement in opposite directions. In the Wright machine the tips of the main planes are warped instead.

When a gust strikes the aeroplane on (say) the off-side the machine will tilt over bodily in the opposite direction. If at this moment the movable tip on the near side be depressed (and the other raised) the resistance of the near side will be increased and it will rise.

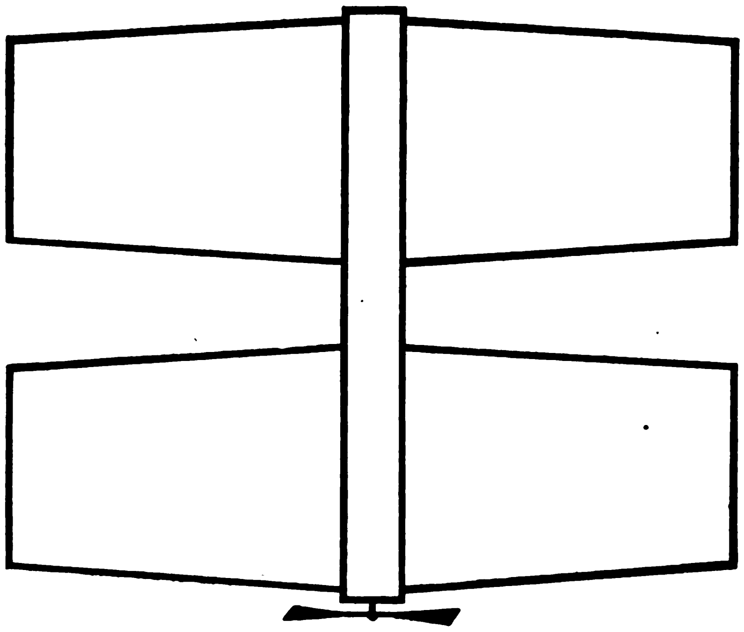


FIG. 4.—PLAN VIEW OF TANDEM BIPLANE

Turns are effected by means of an ordinary vertical rudder (Figs. 5 and 6) which the driver puts over in the desired direction. When the machine swings round, however, the outer edge of the wings tilt upwards because of the fact that they are travelling at a greater speed than the inner edge and consequently creating more wind support. To check this tendency the ailerons (as the wing tips are called) are dipped on the lower side while the turn is being made and as the resistance is thereby increased at that point the machine does not overbalance.

Air Speeds.

Although the speed at which an aeroplane travels is generally calculated in miles per hour, it must be remembered that this is not equivalent to a corresponding number of miles per hour on land because the rate of travel of the surrounding air has to be taken into account. For instance, supposing that we have an aeroplane capable of accomplishing a speed of 50 m. p. h. in calm weather it follows that if a wind of 30 m. p. h. is blowing against it the actual rate of progress will be 20 m. p. h., or if a gale of 60 m. p. h. is blowing the machine will "progress backwards" at the rate of 10 m. p. h.

Similarly if the aeroplane has the wind behind its speed will be equivalent to the speed it is capable of making plus the speed of the wind. If it is travelling at 50 m. p. h. and a 30 m. p. h. breeze is blowing the rate of travel will then be 80 m. p. h.

This peculiarity of flying speeds has given rise to a curious misunderstanding regarding the question of "hovering." Owing to the fact that at certain recent aviation meetings the aeroplanes appeared to be standing still (because of the wind speed and the machine speed being approximately equivalent) the impression gained was that some aeroplanes were capable of remaining motionless over one spot. It must be remembered, however, that the engines were kept running all the time for if they were stopped when aloft the machine would be blown backwards. If the wind and aeroplane speeds are the same, although the machine itself does not actually progress yet it is making a steady speed through the air which is equivalent to the speed of the wind.

FIG. 8.—A CHANVIERE "INTEGRAL" PROPELLER

A precisely similar effect is experienced at sea. If a 10-knot boat is running against an 8-knot current it is really only doing 2 knots per hour. If the speed of the current is 10 knots the boat will remain motionless so long as the engines are kept working. If the current was 12 knots and the boat still headed against it the rate of progress would be 2 knots per hour, but backwards. On the other hand if the boat is running all out with a 12-knot current in its favour its speed would be 22-knots per hour.

Constructional Details.

In addition to those particular points already enumerated there are a number of constructional details which require very careful attention to secure the highest degree of efficiency in

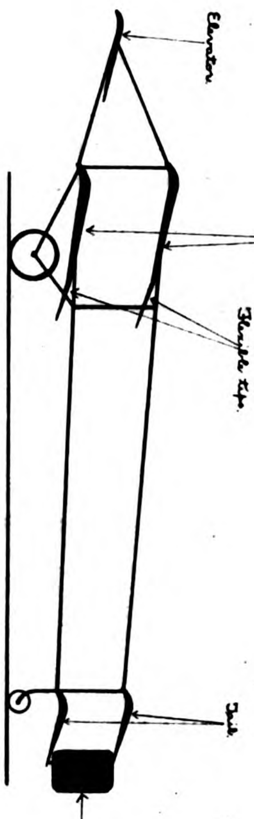


FIG. 5.—DIAGRAMMATIC SKETCH SHOWING ARRANGEMENT OF CONTROLLING DEVICES ON A BIPLANE

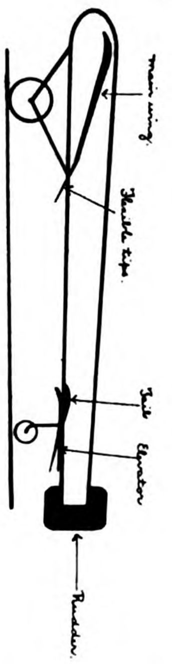


FIG. 6.—DIAGRAMMATIC SKETCH SHOWING ARRANGEMENT OF CONTROLLING DEVICES ON A MONOPLANE

working. Chief of these is the question of skin friction of the surfaces and, although authorities differ as to whether it is really of very great moment, there can hardly be any doubt that a

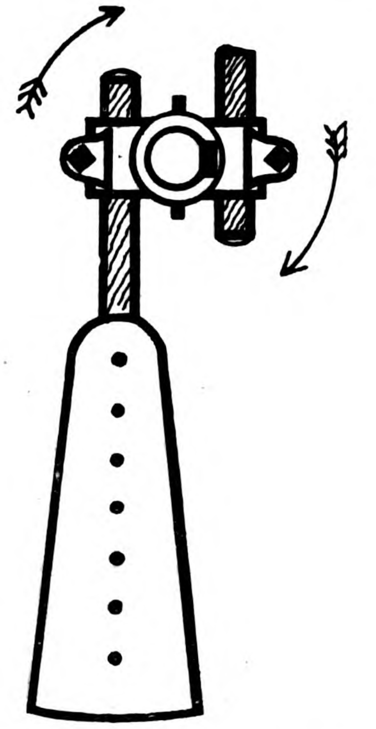


FIG. 7 —THE VOISIN ADJUSTABLE PROPELLER

well-designed smooth-surfaced plane is bound to give better results than one which is roughly made. Observation of the leading machines shows that some are extremely well-finished in this respect while others are just the reverse. On the original Wright biplane a canvas material was used which, although waterproof, was not smooth. Bleriot uses a beautifully made material proofed on both sides with rubber and most of the later aeronauts have followed his example. Such cloths are now made by the big tyre manufacturers.

Since the resistance of an aeroplane increases as the square of its velocity all the struts and stays of the framework should be so designed as to offer the minimum amount of resistance. It has been proved by experiment that the ideal form is more or less fish shaped—that is, having a bluff entry and a very fine run aft. The shape of the body of the monoplane shown in Fig. 6 gives some idea of this particular form.

Next to stability propellers are perhaps the most disputed point in the whole question of aeroplane design and rightly too when one considers that the success of the machine depends almost entirely on their efficiency. Propeller design is a branch of aeronautics entirely by itself, and a very highly mathematical one at that, consequently the prospective aeroplane constructor would be well-advised to buy his propellers from one of the big makers rather than waste time and money in experimenting with them.

The Voisin brothers fitted a very crude type of propeller (see Fig. 7), made of two sheets of metal rivetted to an iron bar, on their early biplanes. Both blades could be adjusted for pitch and diameter by means of the special hub-fitting shown in the illustration. The efficiency was only about 40% however, probably because of the flat-shaped blades and the air disturbance created by the iron arms on the backs.

Bleriot's monoplanes are fitted with wooden propellers (Fig. 8), having curved blades and a fixed pitch. They are built up with a number of pieces of French walnut, then covered with fine canvas and highly varnished. The idea of the canvas covering is, of course, to prevent "fraying" at the edges. Their efficiency is said to be as high as 68%, and this seems not improbable in view of the wonderful performances made on the Bleriot machines.

(*To be continued.*)

INDUSTRIAL DEVELOPMENT IN THE PHILIPPINES

Since assuming the duties of Executive of the Philippine Islands, His Excellency, Governor-General Forbes, has devoted all his efforts to the encouragement of greater effort in the different departments of industry. In this program he has received the support of the great majority of progressive Filipinos as well as foreigners and Americans in the islands. However, there is a voice raised occasionally in opposition to the administration policy that is far from harmonious and which sometimes finds willing ears in the United States. An instance where an effort has been made to embarrass the Philippine administration is that of the protest raised by Congressman Martin of Colorado against the sale of a large tract of wild land in Mindoro to the Mindoro Sugar Development Company. There is little doubt that had the gentleman from Colorado been familiar with his subject, he would have refrained from actively participating in a controversy the end of which would surely make him ridiculous. But he received an endorsement from Manila in the form of a resolution adopted at a meeting of a limited number of agitators who never engaged in agriculture and whose interest in the healthy development of the country has never been a matter of record. This questionable encouragement was all Mr. Martin, in his ignorance of conditions, thought necessary to authorize him to add a few charges against officials to his original quota, all of which were as unfounded as the former. In the meantime, while the matter was being thoroughly aired, the agitator class were encouraged to greater activity. The inclusion of the Moro Province and other sections of Mindanao within the jurisdiction of the Philippine Assembly was agitated. Mindanao, with the exception of a couple of provinces, has been governed directly by the Commission for the reason that a strong central force was necessary to maintain order among the Mahomedan and pagan tribes in that region.

Governor-General Forbes believes in the settling of the country and the development of the jungle before any consideration be given a change in the political status. But the agitation has been so continued that the few scattered natives in the Moro Province have become imbued with the false doctrine and, heedless of the disaster to themselves that would surely follow, have set themselves the task of importuning the government for a change in the political status.

It is gratifying to note the firm position taken by the Governor-General at this time. This may best be shown in an address made by him at Zamboanga, where he gave the political agitators a characteristic answer which ought to be final and at the same emphasized his well-known policy of industrial development. He said in part:

"I am sorry that none of the distinguished Filipinos who have come here to greet me today have presented any suggestions or arguments touching any of the real points at issue in this province; that they have not shown me how I can assist them in bettering their condition by increasing the prosperity of the province. The real problem before the Philippine people is not their political status; that is fixed both here and in other parts. The real problem is the industrial development, and by industrial I mean agriculture, manufactures, and commerce. What we want to do is to increase the products of the Islands, and my advice to this distinguished gentleman who has been talking to us, and to his friends and other people who have been thinking about political changes, is to get busy and devote their attention to the practical questions confronting us—things for which there is something to be done. I have come here to do what I can to help the people to better their condition, to increase the products of rubber, hemp, cocoanuts, sugar, tobacco, lumber, and other things by which money can be made. I want to have, when I come again, Filipinos crowd round me and present suggestions of ways to enable the people to live better, have better houses, better food, and better clothes. No change in the civil status of the government will do that. The government is good enough now; it is all right. To those of you who doubt whether it is a civil government or not, I wish to state that the present government of the Moro Province is purely civil; that General Pershing, although he holds military rank, is a purely civil official in so far as he is governor of the province. I am also happy to inform you that I have found that General Pershing and I are in complete accord; that our views are the same; that we have agreed upon the policy which we will pursue, and anything he says may be taken as being an exact expression of my ideas.

"I liken the improvement of Manila and the means of communication coming in and out of Manila to making sure that the heart is all right. Manila is the heart of the whole archipelago. I am speaking now commercially. Getting the valves and veins and everything working right in the heart will stimulate the movement of that part, which will throw the blood strongly, making it reach every part of the body, to the benefit of the whole. For that reason I think we can not devote ourselves too carefully—and I have devoted my attention to this for the last five years—to making sure that we can handle goods in Manila cheaper than in other places. I want it to compete favorably with the ports of Hongkong, Singapore, and the other ports of transhipment. We have no harbor dues; we have very low wharf dues and that sort of thing. The figures which were presented to me by the collector of customs for the amounts to be charged for the use of wharves I cut in half, although he said he could not cover operating expenses. I told him that we have got to have the port running at a low cost to shippers. I want them to know that the cost here is less than elsewhere. He pointed out that the figure he suggested was about one-half that of other places and one-fourth that of New York. Nevertheless, we cut his figures in two. We want to make the Philippines a place where the captains will all say, 'Take me to Manila.' Heretofore, when I came out here and I believe the practice still exists in some ports, officers of the steamships would try to avoid coming to the Philippines."

Needless to say, the address was welcomed by the progressive settlers of the Moro Province as well as the commercial interests throughout the islands. It settled definitely the status of that important section of the islands that is just beginning to receive attention and has promise of a great future under the firm yet liberal government established there. To change the status at this time would only result in creating a feeling of insecurity and discourage investment and colonization. The Mahomedan and wild tribes are now kept well under control by United States troops supplemented by Philippine Constabulary, but should there be any change that would retire the military from the control of that territory, there is no doubt but that the settlements would soon be wiped out.

As regards the Mindoro land deal, it seems strange that any objection should be raised to the desire of the government to encourage the increase of the acreage of sugar. The land had lain idle for years and the government was obliged to pay interest on bonds representing the purchase price since it was taken over from the religious corporations. Every effort had been made to induce settlement by natives but without success; and when a purchaser appeared having sufficient capital to make 52,000 acres of jungle a producing area, the Government did not hesitate to sell. Indeed, if it had refused the offer, then the spirit of policy of advancement, of progress, of development and of ultimate prosperity, with which Governor-General Forbes is identified, would have been violated. The sale of the Mindoro jungle and the address of the Governor-General at Zamboanga are both conclusive evidences of his consistency and his sincerity.

THE SZECHUEN-HUPEH RAILWAY QUESTION

The following copy of an "Open Letter" to the *North China Daily News* has been received with a request for its publication:

"THE SZECHUEN-HUPEH RAILWAY
(An open letter).

To the Editor of the
N. C. Daily News.

Sir:—

"In your issue of April 7th there was published a long communication from a Chengtu correspondent on the subject of the Szechuen Hupeh Railway. In the letter he makes among other statements the following regarding the accounts of our railway: that the accounts succeed in obscuring many points, but give no balance sheet which could be understood by any auditor; that one does not know what to make of these entries (on Interest and Mint), or how to reconcile the amounts—especially under Mint; that there are two hundred employees filling no less than 122 different offices; and that nothing has been done in the way of construction and yet between five and six million taels or over a third of the total capital has disappeared, etc., etc. It is not difficult for me to appreciate the underlying motive of the writer, who is evidently under the impression that if he succeeded in discrediting the purely Chinese commercial roads, perchance they might by agitation be transformed into loan railways. It is really hardly worth my while to enter into a controversy with your correspondent whose comments, not being based on facts, are utterly worthless. That his misstatements, however, may not deceive the uninformed readers of your paper, I venture to send you these lines.

"That there may appear (to foreigners) redundancy and overlapping in the entering of items on the balance sheet is a charge I am willing to admit, but to say that 'the accounts succeed in obscuring many points and give no balance sheet which could be understood by any auditor' is a deliberate falsehood. According to the Chinese system of keeping accounts, every sum of money that is paid out (no matter whether it is a loan or appropriation that has been repaid) is immediately entered under the head of 'expenditure.' The same sum when repaid appears again under 'receipt.'

"For instance, take the item Interest, which appears on both sides of the balance sheet. Interest was paid to the shareholders (Tls. 870,347) under 'expenditure' and was received from banks and other sources for capital deposited with them (Tls. 1,932,126) under 'receipt.') Instead of one entry for interest received less interest paid out, as would perhaps be done in a foreign system of accounts, in our system, two entries are necessary. Again, take the entry under Mint (Tls. 2,126,693). Because construction work on the railway had not begun and the amount collected on shares was very large, it became necessary that the money be invested, and so the two million odd taels was loaned to the Mint at Chungking. Soon after, the closing of the Mint was ordered, and the sum was returned to the railway, hence the same entry on the 'receipt' side of the balance sheet.

"Your correspondent, who did not take the pains to inform himself, was also puzzled with the items 'Native opium forced tax' and 'Opium lamp forced tax.' The fact is, when the Mint was closed up and had to repay the railway the two million odd taels advanced to it, the officials found that they were short of some six hundred thousand taels, notwithstanding the sums raised by the sale of the copper in stock, and two official appropriations. His Excellency Hsi Liang, the then Viceroy, therefore gave instructions that the shortage should be made up from the Native opium and the Opium lamp taxes. These taxes are a part of the provincial revenue, but have been set aside by the Viceroy to help pay the expenditures connected with the organization of the railway company. These taxes, however, cannot be regarded by the railway as a part of its regular income, until the indebtedness (six hundred thousand odd taels) of the Mint has been first cleared. Hence, the same item

appears under 'Opium tax repaid to Mint' on the 'expenditure' side of the balance sheet. So much for explaining the balance sheet.

"Since the organization of the company the total expenditure up to the end of the fifth moon of last year amounted to only Tls. 1,373,302.00. Your correspondent was guilty of gross exaggeration when he wrote 'between five and six million taels or a third of the capital has disappeared.' Even by the Chinese system of accounting, which as explained above makes the totals very much larger than they really are on account of overlapping entries, your correspondent has intentionally or otherwise mentioned a sum nearly two millions more than that of our balance sheet. He was also guilty of hoodwinking your readers, because he omitted to point out that certain sums on the 'receipt' side have really the effect of cancelling items in the 'expenditure' column, thus reducing materially the totals.

"A word in reply to his stricture that there are 249 employees filling no less than 122 different offices. Your correspondent evidently was ignorant of the fact that the capital of the railway is largely land tax shares from the various districts. Now Szechuen has over a hundred districts; hence it is nothing extraordinary that there should be over a hundred offices.' Permit me to inform you further that each 'office' is allowed only Tls. 200 on very Tls. 10,000 worth of shares collected, and the allowance covers the expense of remitting the share money as well. I should like to be nformed of a cheaper way of floating shares by any banking institution in foreign countries.

"Your correspondent further says 'For ten years the Chinese have decided to build the line themselves,...... There is, at the present moment, a great deal of frantic excitement and hysterical talk, all directed to fomenting the anti-foreign propaganda now in full swing. The ending results in the way of progress are very disappointing.' He concluded by saying that 'the powers that constitute the central government are making a great mistake in remitting the railway constructing policy of the Empire to the varying incompetencies of the Provinces. The line will have to come eventually under foreign expert and financial assistance or it will never be constructed.' From his words, one infers that he should like to see the railway rights of the whole Empire handed over to the foreigners, and I am astounded at his advocating such a policy. Now even in foreign countries in the construction of railways, whether the capital is to come from subscribed shares or from loans is decided by the condition of national finance. In the case of state lines, the capital generally comes direct from the state treasury, so that perfect control of the railways lies in the hands of the government. Where necessity demands the borrowing of foreign loans, the rights of control are impaired and interference in the financial management is a matter of course. As a further consequence the loan syndicate expects to have a voice in the employment of men and purchase of materials for the railway. The people of China, taught by the bitter experiences of the past, have unanimously demanded of the Government to permit the construction of provincial lines with provincial funds, and receiving the consent of the Government, we have organized various provincial railway companies. This movement is aimed at the preservation of our rights and has nothing to do with any anti-foreign propaganda. I had the honor to express this opinion in my speech at the annual meeting of the shareholders last year.

"The Szechuen Railway Company has on hand over ten million taels, and there is an annual income from shares and other sources of over two million taels. The Chief Engineer, Dr. Jeme Tien-yow, and the acting Chief Engineer, Dr. Yen Te-Ching, were instrumental in building the Peking Kalgan Railway, the success of which is known to every one. If they are not experts, who are experts? I fail to understand the meaning of your correspondent, when he says that 'this line will have to come under foreign expert and financial assistance, or it will never be constructed.'

"The other strictures of your correspondent have to do with administrative acts of the Company, which has full power to execute them in the manner it thinks best. Hence, it shall not be my purpose to notice them at all, no matter whether he misrepresented facts or not.

I am, etc.,

(Signed) LI CHI-HSUN,

President of the Szechuen Railway Co., Ichang."

The correspondence published in the *North China Daily News* and to which the above refers, follows:

"THE SZECHUEN-HUPEH RAILWAY

From a Correspondent

Chengtu, March 9.

A CHINESE STATEMENT OF ACCOUNTS

"As you are aware, the loan for this railway has occupied the attention of all Europe and America as well as China for a very long period. It is to-day as far from a settlement as ever.

"For nearly ten years the Chinese have decided to build the line themselves. They have energetically endeavored to persuade investors to buy shares, they have also for years collected forced taxes, until the total sum from all sources has reached the respectable total of roughly Tls. 16,000,000, say £2,000,000. The subscribed shares are about 25 per cent of the whole, the remaining 75 per cent being forced taxes.

"There is at the moment a great deal of frantic excitement and hysterical talk, all directed to fomenting the antiforeign propaganda now in full swing. The ending results in the way of progress are very disappointing.

"I have been able through friends to get an original copy of the statement of accounts published in response to the popular clamour. They succeed in obscuring many points, but give no balance sheet which could be understood by any auditor, much less certified as correct as even establishing the actual and exact financial position. Let me quote some facts and figures.

"The documents showing the accounts, which I possess, are twelve very large sheets, and when spread out would cover the floor of an ordinary room. These accounts were only issued in January this year. Another group of shareholders are now working at them and a further statement is promised this year. In this way they keep themselves amused and employed while the funds daily grow less. Along these lines the railway will never be completed.

"A circular was sent out on August 26, 1909, registered at the Imperial Post Office, strange to say, as a newspaper, to the shareholders, inviting them to a meeting in Chengtu from November 26 to December 8, 1909. Some 657 men answered to their names when the meeting opened, these men came from widely scattered districts all over these Western Provinces. The delegates are paid from the Railway funds $2 a day travelling allowance and 50 cents a day for living expenses while at Chengtu. According to the regulations a shareholder must hold Tls. 2,500 shares to be entitled to vote and, in the case of a voluntary subscriber or shareholder, is limited to twenty-five votes, whereas the delegate representing the forced tax may cast an unlimited number at the rate of one for each Tls. 2,500. The Pahsien delegate as a matter of fact had 125 votes for the forced tax from that district, which shows a discrimination against the private shareholder as against the official representative of the tax contributions. When the tax receipts reach 50 millions the income from that source will cease, and the line will have to depend entirely upon the private or voluntary shareholders. Judging from the rumours that are going round the country, as expressed to me by several shareholders, I think it extremely improbable that they will raise from the public investor the 65 millions they have set out to get.

"The following is an abstract or balance sheet to which I append a few notes.

DR.	Tls.
Shares privately or voluntarily subscribed	2,761,450
Forced tax shares (on land)	7,155,540
Native opium forced tax	892,973
Opium lamp forced tax	336,853
Interest on share capital	1,932,126
Interest on public funds	76,938
Copper coinage mint	2,107,304
Salt and tea taxes	94,088
Miscellaneous receipts	29,921
Deficit copper mint	19,389
Tls.	15,405,952

CR.	Tls.
Interest paid away	870,347
Convoys	214,410
Students	265,988
Inquiry commission	7,336
Purchase of implements	44,743
Salaries	192,455
Building	67,726
Surveys	108,400
Printing	86,820
Maintenance	10,592
Land purchase	21,922
Transport	5,197
Cost of remittances	69,768
Postage and telegram	9,237
Copper Coinage mint	2,126,693
Miscellaneous	256,754
Rent	2,902
Engineers Department	9,054
Opium tax repaid to Mint	613,652
Balance in hand	10,421,958
Tls.	15,405,952

PURCHASED SHARES. These have steadily declined from Tls. 2,535,697 in the 1st year to Tls. 136,890 in the 2nd and finally Tls. 87,863 in the 3rd year. Subscription has now practically ceased and if one may believe the common rumours the public will have learned from the 600 odd delegates' reports something as to the real financial situation. These rumours have shattered public confidence.

"Indeed, a public official states to me that in his opinion they would never build the line and that in three years or five at the most the last step would have been taken when the aid of foreigners would have to be requisitioned.

"FORCED SHARES. The yield from this source, as it is a fixed compulsory tax, has been more or less regular.

"OPIUM TAX. The receipts from this source if the present prohibition policy is sustained will cease altogether.

"INTEREST AND MINT. One does not quite know what to make of these entries or how to reconcile the amounts—especially under Mint. It is to be noticed, however, that the interest paid increases annually 1st year Tls. 160,376, 2nd year Tls. 243,681, 3rd year Tls. 466,269.

"SALARIES. There are 249 employees filling no less than 122 different offices. If the Chinese are babes in railway matters they are expert past masters in this particular department and could probably give a good many points to home railway directors on the look-out for an opportunity to increase the number of its offices and fortunate holders of the same. What can possibly be the duties of all these offices and officers in a Railway which is still only 'n the air?'

"There are three General Managers drawing respectively Tls. 500, Tls. 300, and Tls. 200 a month. Three Inspectors of correspondence, etc., at Tls. 100 a month each. Three Managers at Tls. 100, Tls. 220 and Tls. 300 a month respectively. Also an agent at Hankow enjoying Tls. 300 a month. Possibly a part of his duties may be the maintenance of the agitation against foreign loans and interference at that point.

"The Engineers are remarkably well. Jeme's salary as Engineer-in-Chief is not set down, but the assistant chief Yen gets Tls. 810 a month. Engineer Lu gets Tls. 620 a month. Other engineers draw monthly pay as follows:

	Salary.	Travelling allowance.	Monthly Total.
Su	Tls. 250	$140	Tls. 350
Keng	250	105	325
Wen	200	173	322
Chen	200	Tls. 45	245

"The cadets get what is certainly princely salaries for Chinese youths, varying from $133 to $233 per month. All the highly paid men are Szechuanese to a man. Naturally all these are enthusiastic, as long as the funds last, for a Chinese railway as opposed to a foreign loan with all strictness of foreign oversight and control.

CONTRACTING NEWS

BIDS OPENED. SHANGHAI MUNICIPALITY.—20 Induction Motors.—Bid of Messrs. Jardine Matheson & Co., Ltd., accepted, Bergmann Motors, £855. 8. 3., delivery 20 weeks.

The remaining tenderers are as follows:

Name of Tenderers.	*Makers.*	*Delivery Weeks.*		*Price.* £		
Samuel, McGregor & Co	Bergmann Electrizitats Werke	24	(*a*)	£ 789	9	3
,,	,,	24	(*b*)	807	11	6
Siemens Schuckertwerke	Siemens Schuckertwerke	18		845	5	0
Samuel, McGregor & Co	Bergmann Electrizitats Werke	24	(*c*)	880	11	9
,,	,,	24	(*d*)	947	7	0
Shewan, Tomes & Co	Rhodes Motors, Ltd	13		952	10	0
,,	British Westinghouse Electric & Manufacturing Co	14		952	12	6
Shanghai Electric & Asbestos Co., Ltd	The General Electric	15		996	11	0
Ilbert & Co	Greenwood & Batley	15		1,064	7	0
Melchers & Co	Bergmann Electrizitats Werke	26		1,074	5	2
Arnhold, Karberg & Co	Allgemeine Electrizitats Ges	17-19		1,076	0	0
Brush Elect. & Eng. Mfg. Co	Brush Elect. & Eng. Mfg. Co	15		1,087	19	0
Brighten, Malcolm & Co	,,	15		1,087	19	0
Andersen, Meyer & Co	British Thomson Houston Co	19		1,098	0	0
Samuel, McGregor & Co	British Westinghouse Elect. & Mfg. Co	18		1,104	3	8
Siemssen & Co. (The Lahmeyer Electrical Co. Ltd.)	Felten Guilleaume Lahmeyer Werke	18		1,204	12	0
Brown, Boveri & Co. (direct)	Brown, Boveri & Co	29		1,208	19	3
Von During, Wibel & Co. (Brown Boveri & Co.)	Brown, Boveri & Co	29		1,208	19	3
Lancashire Dynamo & Motor Co., Ltd	Lancashire Dynamo & Motor Co	11 & 21		1,324	0	0
John E. Hall	,,	11 & 21		1,324	0	0
Jardine, Matheson & Co	Crompton & Co	15		1,327	6	6
Scott, Harding & Co	Lancashire Dynamo & Motor Co	17		1,410	16	6
,,	,,	17		1,497	9	0
Lancashire Dynamo & Motor Co., Ltd	,,	11 & 21		1,510	0	0
John E.-Hall	,,	11 & 21		1,510	0	0
Scott, Harding & Co	,,	17		1,588	8	6
,,	,,	17		1,683	9	0
Innis & Riddle	Langdon-Davies Motor Co	16		1,030	10	0
,,	E. Brook Ltd., (portion of contract only)	12		115	10	0

LUBRICATING OIL ANNUAL SUPPLY.—Contract awarded Vacuum Oil Co. at following prices:

	Tls.	
Extra Hecla Cylinder Oil "B"	1.44	per Imp. gal. less 10%
Vax Cylinder Oil	1.14	" "
Vacme Polar Cylinder Oil	0.85	" "
Vacme M. Engine Oil	0.86	" "
No. 1 Crank Chamber Oil	0.82	" "
Vacuum Machine Oil	0.52	" "
Gear Grease	0.10	per lb.

The following are authorized for acceptance:—

For the annual supply of timber.

1.—The China Import and Export Lumber Co., Ltd., Oregon Pine and Singapore Redwood at prices as follows:—

Oregon Pine planks, Tls. 39.50 to Tls. 40 per 1,000 sup. ft.

Oregon Pine logs, Tls. 40 to Tls. 45 per 1,000 sup. ft.

Oregon Pine Red, Tls. 60 per 1,000 sup. ft.

Singapore Redwood planks, Tl. 0.55 to Tls. 1.35 each.

2.—Messrs. Jardine, Matheson & Co., Ltd., Hardwood and Foochow Poles, at prices as follows:—

Japan planks 7′ 6″ by 1″, Tls. 2.34 each.

Malava planks, Tls. 89.55 per 1,000 sup. ft.

Malava logs, Tls. 79.60 per 1,000 sup. ft.

Selangan Batu planks, Tls. 84.58 per 1,000 sup. ft.

Selangan Batu logs, Tls. 74.63 per 1,000 sup. ft

Foochow Poles, dimensions and prices as per schedule, and other dimensions as required at various prices.

BIDS OPENED. CHIEF QUARTERMASTER, MANILA.—One Ocean-going Steamer 1,000 to 3,000 tons. Following bids submitted:

Messrs. Wise & Co., bidding for the Shanghai Dock & Engineering Co., of Shanghai, bid on five steamers of the P. & O. fleet as follows: The S. S. *Java*, gross tonnage 4093.14 knots, $60,000, S. S. *Ceylon*, gross tonnage 4094, 13 knots $60,000, S. S. *Japan*, 4319 gross tons, 14 knots, $60,000, S. S. *Manila*, 4210 gross tons, 13 knots, $60,000 and the S. S. *Oriental* of 5284 gross tonnage, 15 knots, $100,000. Mr. James F. Macleod bid on two steamers of the Hamburg-American fleet, the *Loongmoon*, 1971 tons gross measurement, 13 knots, $85,000, and the *Lyeemoon*, 1925 gross tons, 13 knots, $75,000. Messrs. Smith Bell & Co., Ltd., bid also on two steamers offering the *Sungkiang*, gross tons 1622, for $52,000, and the steamer *Taisang*, gross tons 1544, for $40,000. F. T. Figueras bid for the sale of the Fiume, gross tons 1386, $40,000, and Messrs. Hidalgo, Cuyugan & Co. offered the *Atlant s* of 1528 gross tons for $50,000. The steamer *Rigel* of 758 gross tons was offered by Messrs. Pujalte & Co. for $51,000, and Gutierres Hermanos bid the *Magallanes* of 1321 gross tons in for $95,000. Messrs. Germann & Co., Ltd. one 10 knot steamer $146,970, one 12 knot steamer $174,780. Delivery to be made at Manila or Tsingtau.

SIX SCOW LIGHTERS.—Two 50 feet in length; four 80 feet in length. The Hongkong & Whampoa Dock Co. bid $3192 each for the two 50 foot lighters and $6084 for each of the four 80 foot scows. Built according to specification of Oregon pine and delivery of first lighter to be made in six weeks and on each week following, or all to be delivered in 11 weeks.

Messrs. Simmie & Pierce $2225 and $4325 each, Oregon pine construction, and delivery of first scow in 30 days and one every 12 days thereafter.

Fred Wilson & Co., representing George Fenwick & Co. of Hongkong, bid $4890 and $7375 each, and agreed to deliver 2 lighters in three and one-half months, 2 in 4½ months and the balance in 6 months.

H. Thurber offered to build the small lighters for ₱4475 and the larger ones for ₱7375 Philippine currency, delivery of all to be made in 180 working days.

John Gordon bid $1950 and $4500 respectively. Gordon asked for payments as lighters were finished and refused to accept less than 50% of the work. He agreed to deliver half in 90 days and the other half in 180 days.

The Atlantic, Gulf & Pacific Company were the next lowest bidders to Allen. Their bid was $1590, U. S. currency, for the small scows and $3948 for the 80 foot lighters. Oregon pine was the material offered and the company agreed to make delivery of 2 scows in 60 days, 2 in 120 days and 2 in 180 days.

Arthur F. Allen, who was the lowest bidder for the work of constructing the scows, bids as follows: Small scows ₱3,500 each and ₱7,400 each for the larger ones. Oregon pine or native wood at the same price that Oregon pine can be bought in the market. Delivery to be made 2 in two months, 4 in three months and 6 in four months.

HARBOR BOATS.—Messrs. Castle Bros.-Wolf & Sons, representing the Taikoo Dockyard Co. of Hongkong, bid $67,117.50, or two boats for $132,750. This firm agrees to deliver one boat in nine months and two in ten. They also agree to deliver the boat at Manila under her own steam The Kawasaki Dockyard Co., of Kobe, agree to deliver one boat at Manila in 14 months time for 278,500 yen, and the Mitsu Bishi Dockyard & Engine Works of Nagasaki agreed to deliver the boat at Manila in nine months time for 169,000 yen. Messrs. Findlay & Co., representing the Hongkong, Whampoa Dock Co. of Hongkong, bid $73,837, U. S. currency, for one tug and two for $72,710 each, delivery to be made in 7 and 8 months respectively. The Kiangnan Dock Yards & Engine Works of Shanghai agreed to construct one steamer for $75,000 and two for $148,000, delivery in 8½ and 9½ months. Messrs. Germann & Co., Ltd., representing Tsingtau Werft of the Tsingtau Docks in China, agreed to furnish a 750 horse power harbor boat for $93,170 at Tsingtau, or $95,122 delivered at Manila. If two boats were furnished a reduction of $3,000 would be made. The delivery to be made in 9 months on the first and the second four months later. Wise & Co., bidding for the Shanghai Dock Co, bid $74,700 for one and $141,930 for two, delivery to be made at Manila in 8 months.

3,000 RAILWAY SLEEPERS.—Tayabas Saw Mill and Lumber Company ₱1.60 each, Pagatpat, complete delivery in 100 days; Tuason and Sampedro ₱3.24 each Ipil, Yacal or Dungon, complete delivery in 100 days; Derham Bros. $.985 each, Montol, complete delivery in 10 days.

ONE MILLION FEET OREGON PINE OR LAUAN.—On the native wood Derham Brothers bid ₱35.80 f. o. b. at Port Bonga; the Cadwallader, Gibson Lumber company, ₱45.90 ex mill dock and ₱47.90 delivered at quartermaster's dock, and the Insular Lumber company ₱50 ex ship and ₱52.50 ex yards.

The Oregon pine bids were: Findlay, Millar Lumber company, ₱40.60; California Lumber company, ₱40.64; and the Export and Import Lumber company, ₱41.30.

1,500 POUNDS STEEL.—Contract awarded Messrs. W. F. Stevenson & Co., Ltd., on a bid of that company on American steel, railroad bridge grade, one fourth inch $.0373 and $.0362 for 3-8 inch, all other sizes $.03356, U. S. currency.

The amount of the bid approximates $30,000, U. S. Currency.

BIDS OPENED, BUREAU OF SUPPLY, MANILA.—40,000 tons of coal. W. F. Stevenson & Co., Ltd., bidding on Australian West Wallsend, Manila ₱10.73, Iloilo ₱11.23, Cebu ₱11.23, Jolo ₱11.54, Tacloban ₱11.54, Romblon ₱11.54, Balabac ₱11.54, P. Princesa and Zamboanga ₱11.54. Macondray & Co. Inc. bidding on Newcastle Wallsend, Manila ₱10.58, Iloilo and Cebu, ₱11.83, all other ports ₱12.32. Their

FAR EASTERN RAILWAY NEWS

JAPANESE RAILWAYS.—The announcement is made that during the present year it is expected to complete a total of 192 miles of line which, in addition to the 6731 miles in operation at the end of 1909, will bring the mileage up to 6923. The program for 1911 represents 237 miles of construction. The following is the table of the construction for the present year:

	Mileage	Date.
Hokkaido Line	31.09	Sept.
Hokkaido Line	48.08	"
Gwan-Etsu Line	10.56	Oct.
Central East Line	7.53	"
Central West Line	7.11	"
Maizuru Line	26.07	Sept.
Sanyin East	4.77	Oct.
Sanying West Line	11.31	May
Sanyin West Line	2.41	"
Sanyin West Line	7.18	Oct.
Toyama Line	14.67	April
Uno Line	20.37	May
Total	192.10	

And the program for the period commencing January 1st, 1911, is given by the *Financial and Economic Monthly* as follows:

Lines	Running Mileage	Construction Expenses	
	mile	*yen*	*yen*
Hokuetsu	15.69	2,218,197	139,860
Kyushu	48.69	8,430,528	172,757
Bo-So	46.43	6,442,916	138,438
O-U	92.16	14,984,457	162,521
Hokkaido Sorachi Coast	36.68	5,040,860	136,754
Kyushu	32.20	7,188,472	222,898

JAPANESE RAILWAY PLANT.—The program of the Railway Board includes the construction of a large plant for the manufacture of general railway supplies at Omori. The site will cover an area of about 60,000 square yards, and have three times the capacity of the plant at Shimbashi. The machinery from the latter will be transferred to the new plant and an addition of modern machinery will be added.

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bid on Japanese Ochi was Manila ₱9.14, Iloilo and Cebu, ₱10.73, all other ports ₱12.74. Smith Bell & Co. bid on Australian Seaham as follows: Manila ₱10.94, Iloilo ₱12.035, Cebu ₱12.06, Jolo, Tacloban and Romblon ₱13.13, Balabac and P. Princesa ₱28.44, Zamboanga ₱14.93. Mitsui Bussan Kaisha bid on Japanese Tagawa, Manila ₱10.65, Iloilo ₱12.50, Cebu ₱12.10, Jolo ₱13.80, Tacloban and Romblon ₱12.70, Balabac, Puerto Princesa and Zamboanga ₱13.10. T. Figueras bid on Australian Pacific, Manila ₱10.45, Iloilo and Cebu, ₱11.15, all other ports ₱11.25. Ker & Co. bid on Mount Kemblar, Osborn, Mount Pleasant, Wallsend. Metropolitan and Coal Cliff as follows: Manila ₱10.06, Iloilo and Cebu ₱11.16, Jolo, Tacloban and Romblon ₱13.395. No bid on other ports. Messrs. Behn, Meyer & Co., Ltd., bid on Lauban coal as follows: Manila ₱8.83, Iloilo ₱9.53, Cebu ₱9.33, all other ports ₱9.63.

PROPOSALS FOR FIRE HOSE.—SHANGHAI MUNICIPALITY.—Bids opened, July 16.

2,000 ft. 2½ in. Double Jacket Cotton Para Rubber lined Fire Hose in 50 ft. Lengths, uncoupled.

2,025 ft. 2½ in. Flax Machine-made, Canvas, Unlined, Fire Hose in 75 ft. Lengths, coupled; couplings to be expansion ring pattern, gunmetal, V right hand threads, 5 threads per inch, 3¼ in. ext. dia. and to be provided with two lugs ¾ in. dia., ⅞ in. length.

PROPOSALS FOR 10,000 CUBIC FEET OF TEAK.—Bureau of Supply, Manila. Bids opened July 20. Dimensions must not be less than 14" square and 16′ long.

THE ANTUNG-MUKDEN RECONSTRUCTION.—It is expected that over fifty miles between Antung and Chihkwanshan will be completed and in operation by October this year. The broad gauge has been laid for 25 miles between Mukden Shihchiaotsu. The material is secured from the mountains for grading and brickyards are established along the right of way. The work on the tunnels, the most difficult part of the construction, is being pressed. There are 25 in all aggregating about 9,000 yards. Of this length about 8,000 yards, including the Taling tunnel, have been completed. The construction of the Antung-Mukden line, says a Japanese exchange, is to be completed by August 1911, and the Yalu bridge is also to be finished within next year. When Mukden and Fusan are thus linked, not only will the line become a highway for traffic between Japan and Russia, but a new way will be opened to Peking by connecting the line with the Peking Mukden road. By the Fusan-Mukden road, Mukden will be reached in 43 hours from Moji, against 60 *via* Dairen, where also a further delay may occur in making the connection between steamer and train. Moreover, it is only natural that people should prefer to travel by rail than by steamer.

INTERNATIONAL THROUGH TRAFFIC AGREEMENT.—The South Manchurian Railway has been advised of the conclusion of the conference between the Russian and the Japanese representatives and has announced the result as follows: With regard to through freight the principles adopted were along the lines of the Berne convention with such modifications as conditions in Manchuria required. That the traffic should be organized by combining the prevailing tariffs of the South Manchuria and the Chinese Eastern Railway, and that special rates should be allowed only on timber, flour, spirits, cement, butter, and salt fish from the Chinese Eastern Railway and coal, cement, vegetables, fruit and fresh fish from the South Manchuria Railway.

THE TIEHLING-HAILUNGCHENG RAILWAY.—Preliminary surveys are being made by a Chinese engineer for this line which, when completed, will serve the region now tapped by the Sungari River and secure a large share of the trade that now goes by way of Kirin. The line will tap Kuanchieh and Menhkiang, situated on the upper reaches of the Sungari and Panshihhsien, Chaoyangchen, Liuhohsien, Taolu, and Utung, all situated on the Huifa and Itung Rivers.

HONGKONG-CANTON RAILWAY.—There is every indication that the line to the Kowloon boundary will be completed by July 1st. The Chinese section will be greatly expedited by the facilities provided by the British section when completed for the carrying of materials, etc., for construction work from the Kowloon end. It is expected that the Chinese section will not be completed until about August 1911.

THE CANTON-MACAO RAILWAY.—The announcement is made from Peking that the Portuguese Minister has again opened the question of completing this line. It will be remembered that an attempt was made recently to secure permission to complete the line with Chinese and Portuguese capital. It is understood that the proposal is now meeting with favor.

THE YUNNANFU RAILWAY.—The *Avenir du Tonkin*, commenting on the disappointment of Haiphong in the small increase of traffic following the opening of this important road, declared that the high rates charged by the company are responsible.

HARBIN-HSUI HUA-HAI LUN RAILWAY.—Advices from Harbin are to the effect that the National Communication Bank and the Kwang Hsing Co. have expressed their willingness to finance the construction of a line of light railway to cost Tls. 5,000,000. The line will be 150 miles in length and serve to carry cereals to the interior of Mongolia as well as to tap the wealth of that region.

SOUTH MANCHURIA RAILWAY RECEIPTS.—Passenger receipts for April this year amounted to yen 337,277 and freight yen 753,678, a decrease of yen 126,900 compared with the returns for the corresponding term, 1909.

THE INTER-INDO-CEYLON RAILWAY.—This enterprise which is to place Ceylon in connection with India is to receive attention this year. An appropriation of £300,000 has been made, of which one-third will be spent this year. The sum of £100,000 will be expended in the completion of the Pampam Viaduct and the bridge joining the island of Rameswaram and Mandapam.

THE LOKYANG-TUNGKWAN RAILWAY FINANCE.—A report from Peking is to the effect that Mr. Straight has arranged to take up the loan for Tls. 5,000,000 to finance this line. It will be remembered that recently arrangements were practically concluded with the Kungyi Bank for the latter to advance the sum needed. It has been announced that the latter's inability to raise the money is responsible for the negotiations towards an American loan.

NEW LOCOMOTIVES FOR THE SHANGHAI-NANKING LINE.—According to the *N. C. Daily News*, the management of the Shanghai-Nanking Railway has placed an order for four express passenger tender locomotives of the 4-2-2 and 6 type with Messrs. Kerr, Stuart & Co., Ltd., of the California Works, Stoke-on-Trent, who established an office here in March last. The contract means a record in construction, as two of the engines have to be completed in forty-five days. But for a few minor details, these engines are identical with the famous single-driver locomotives of the Midland Railway, which are booked to do the journey between London and Nottingham at an average speed of 52.5 miles per hour, and whose actual running speed ranges from 52.8 to 55.68 miles per hour with a load of upwards of 200 tons. As there are no steep gradients on the Shanghai-Nanking Railway, such as exist on the Midland Railway, the engines now on order are expected to give even better results than those mentioned above. Messrs. Kerr, Stuart & Co. have received a similar order from the Chekiang Railway for engines of the 4-4-0 and 6 type.

PROFITS OF CHINESE RAILWAYS.—The net profits for the year 1909, according to the correspondent of the *Jiji Shimpo* at Peking, amounted to Tls. 6,400,000. The *Jiji* says that out of the ten Chinese railways two, namely, the Kyukiang and the Pinghsiang, show accounts which balance exactly, neither profit nor loss being in excess. Six of the roads show a net loss of 2,600,000 Taels; and two, namely, the Peking-Hankow and the Peking-Mukden, show a substantial profit. The figures work out as follows:—

	Taels.
Peking-Mukden Gross Earnings	12,000,000
Peking-Hankow Gross Earnings	9,600,000
Total	21,600,000
Gross Expenditures on the above two lines	11,600,000
Net profits on the above two lines	9,000,000
Losses on six roads	2,600,000
Net profits over the whole system	6,400,000

INSPECTION OF RAILWAYS.—According to the Peking correspondent of the *N. C. Daily News* the Yuch'uanpu was recently ordered

by decree to inspect the Fukien, Chaochou-Swatow, Sunning and Huichou-Chaochou railways; and the result, as reported by the Ministry, shows that altogether the proposed railway lines in the Fukien province amount to over 2,000 li, but the line from Changchou to Amoy, 90 li, is first to be built. The line has been completed for ten or twenty li, and construction work, such as embankments or bridge building, is proceeding for the rest of the line. The line is level and straight and the construction is substantial. The subscribed capital is to be Tls. 1,370,000 and funds are required. With regard to the Chaochou-Swatow Railway it is reported that the length is eighty-five li, and that the line has been completed. The stations and cars are satisfactory, but the locomotives are not of the best pattern. The paid-up capital was $3,024,000 but $3,123,000 has been expended. After deducting cost of maintenance the receipts would pay about one per cent interest. The Sunning railway is to run from the Sunning city to the Kungyi Port, a length of 122 li, and it was completed last year. The paid-up capital was $2,740,000 and the actual capital expended was $2,500,000, leaving a surplus. The dividend is 2 or 3 per cent. The Chaochou-Huichoufu line was abandoned owing to the share holders breaking up.

The Chefoo-Weihsien Railway.—According to the latest advices, the required deposit of $3,000,000 has not been made up according to the instructions of the Governor of Shantung and the promises of early construction on this proposed line are far from bright. This condition was imposed by direction of the Board of Communications when the request for permission to inaugurate this line was made. It is understood that only $1,700,000 are available. An endeavor is being made to secure the necessary subscription to make up the deficit.

Hulan-Tungkeng Railway.—Viceroy Hsi, according to advice from Mukden, is preparing a memorial to the Throne to secure sanction for the construction of a light railway between Hulun and Tunkeng, a distance of 117 miles, at an estimated cost of one million yen.

Philippine Railway Construction.—The line is now within a mile of Dao, Panay, which brings the construction from either end of the line within six miles of each other. The equipment for driving piles for the bridge over the Dao River was taken over the track.

The company has inaugurated an automobile service over fifteen kilometers of line connecting Janiuay and Pototan, the latter being a station on the Panay line and situated in a thickly populated district. The fare is forty centavos over the four zones in which the extension is divided. Through rates to any point along the line for passengers and freight have been issued.

The Kirin-Chanchun Railway Construction.—Recent reports are to the effect that the rails for this line will be supplied by the Hanyang Iron and Steel Works. The work of construction is now progressing. Japanese and Korean laborers are employed.

The Hunan Railway Agitation.—An indication of the attitude of the Honan Chinese towards foreign railway loans may be taken from the following dispatch from Peking:

On the 21st May Li, a representative from Hunan to get sanction for the rejection of the foreign loan for railways, seeing that a certain Peking newspaper published a report that Hunanese in Canton have approved of having a foreign loan for Hunan railways, felt indignant and wept and cut one of his fingers and wrote with blood "Railways in Hunan should not borrow loans and I hope the Grand Secretary (Hsu Shihchang) will maintain that view" in fifteen Chinese characters and presented the writing to Hsu Shih-chang, the President of the Board of Communications. President Hsu was much affected.

Peking Railway News.—Application was made to H. E. Hsi Lia Liang, Viceroy of Manchuria, by the Russian Consul at Mukden proposing the construction of a line connecting Harbin and Hunchun, but the Viceroy declined. Later the Russian authorities took it up with the Waiwupu and the latter sustained the Viceroy.

The report is made by the native press that a loan has been arranged with American capitalists for Tls. 18,000,000 and with British capitalists for Tls. 10,000,000, the funds to be used in the construction of the Kaifengfu-Changchow Railway.

The Kinchou-Aigun Railway.—In a letter to Messrs. Pauling & Co., Director Okamatsu of the South Manchuria Railway Company denies that Japan is opposed to the construction of this line and states that his country is anxious to participate in the financing and construction of the road with a share in the supply of materials. He writes that Japan would want the right to build a branch to connect the line with the South Manchuria. Mr. Wilfred Straight recently returned to New York via Europe to meet his principals in connection with this line. It is believed that his purpose is to interview Russian financiers with a view to securing their co-operation.

The Canton-Hankow and Hankow Szechuen Railway Loan.—Advices from London on May 28th were to the effect that an agreement had been reached between the different nationals interested in this loan, and the impression was made that this meant the conclusion of the negotiations with the Chinese Government. The preliminary negotiations between the capitalists and the Chinese Government had been postponed for the reason that the German, French, British, and Americans could not agree. Now that they have agreed as to the division of the loan, the preliminary negotiations will be renewed and unless the provincial anti-loan influences seriously interfere, the conclusion of the loan may be arrived at within the year.

The Shanghai-Nanking Express Service.—This company inaugurated a fast service on its line on June 1st most successfully by an excursion to Soochow and return. A speed of 46 miles an hour was maintained on the outward trip and the return developed a speed of 60 miles, the maximum being 63 miles an hour at certain points. The track was in excellent condition. The locomotive used on this trip was a four wheeled coupled express engine manufactured by Messrs. Robert Stevenson & Co. of Darlington. The weight of the leading bogie wheels is 9.3 tons, trailing bogie wheels 9.65 tons, driving wheels 18.95 tons, trailing bogie 18.15 tons. Tender leading wheels 13.55 tons, intermediate wheels 13.55 tons, trailer wheels, 14.3 tons. Bogie empty 17.9 tons, engine 51.25 tons, tender 18.5 tons. Total weight of engine and tender empty 69.75 tons; bogie in working order 19.55 tons; engine in working order 56.65 tons; tender in working order 41.7 tons; engine and tender in working order 98.35 tons; tractive force at 75 per cent cut off 17.260 pounds; length wheel base of engine and tender 48 feet 9 inches; total length over the couplings 67.33-4; diameter of cylinders 18.26; diameter of driving wheels 6 feet 7 inches; diameter of bogie wheels 3 feet 6 inches; heating surface tubes 1,467.39 square feet. Fire box 162.61; Total heating surface 1,630 square feet; grate surface having an area of 28 square feet.

The first class coaches are of the most modern construction, electrically lighted and kept cool by a comprehensive system of fans. This express will have second and third class coaches, the former with a capacity of 72 passengers and the latter 130. The service was inaugurated June 3rd. Special arrangements were made for handling the special traffic to the Nanking Exposition. The following is the official notice published by Traffic Manager A. W. U. Pope:

"On and from the 3rd June, 1910, the present Time Table will be entirely revised.

"The Fast Train will leave Shanghai at 7:45 a.m. instead of 12:45 p.m. and the Slow Train at 8:10 a.m. instead of 8:00 a.m., the former stopping at the principal stations only, and the latter at all stations. No first class car will be attached to the Slow Train.

"There will also be an additional Limited Express Train leaving Shanghai at 1:05 p.m. and Nanking at 1:20 p.m. stopping at Soochow, Wusih, Changchow, and Chinkiang only. This train will hold only 48 1st class, 72 2nd class, and 450 3rd class passengers for the stopping stations, and when that number is accommodated the booking will stop. Seating will be provided on priority of application or booking. No pass holders will be admitted to this train, and no special cars will be attached for the public.

"A night train will run on Saturdays leaving Shanghai for Nanking at 10 p.m., returning from Nanking at 10 p.m., on Sunday.

"On Saturdays and Sundays, the ocal train which leaves Shanghai for Soochow at 6:10 p.m. and on Sundays and Mondays the local train which leaves Soochow for Shanghai at 7:30 a.m. will be cancelled.

"Important alterations will also be made in the running of other Main Line and Woosung Line Trains.

"New Time Tables may be had on application to any Station Master of any Station on the Railway, or from the General Offices, Shanghai Station on and from the 1st proximo."

PHILIPPINE MINING NEWS

Quicksilver in Benguet.—Warren D. Smith, Chief Division of Mines, announces the discovery by Mr. Hulbert of the Major Mining Company and Mr. Smith of a sample containing cinnabar, mercury sulphide, on Batwaan Creek, Benguet. It was found in the heavy concentrate while panning for gold. Only small quantities have been realized, but it is not improbable that it might be found in commercial quantities. The same material has been located near the Kios trail. The following information has been published in regard to this mineral by the Division:

"To assist prospectors who may not be familiar with the characters of cinnabar, the following information is furnished. It is a sulphide of mercury, Hg. S. and, when pure, contains 86.2% of mercury. It is very heavy its specific gravity being 8 to 8.2, it occurs in bright vermillion to brownish-red masses of granular texture; more rarely as small transparent rhombohedral crystals (its form in Benguet) or a bright scarlet powder, or an earthy red mass.

"Easy tests:—Heat the powder in a closed tube when a sublimate of mercury, or a 'mirror' will form in the cooler part of the tube, or if cinnabar powder is moistened with hydrochloric acid and rubbed on a bright copper, the coin will be coated with mercury

The Paracale Extension Company.—Messrs. M. A. Clarke and Nels Peterson, who are interested in the promotion of the Paracale Extension, are expected to return to Manila from Shanghai at the end of the month after which Mr. Peterson will proceed to New Zealand to purchase the first of two dredges to be installed during the next year on this property. It is understood that sufficient capital to instal the first dredge has been raised among Shanghai capitalists. The property is considered one of the most valuable in Paracale.

The Benguet Consolidated Mining Company.—The output for the month of May was 100 ounces making in all to date about ₱20,000 worth of gold taken out since the disastrous flood of October. The company is preparing to restore the cyanide plant and increase the present capacity of the batteries.

The Stanley Company.—The returns from the Stanley dredge in Paracale for May amounted to 108 ounces. Paracale is now in the middle of the dry season and water is scarce for dredging purposes. The Stanley is slowly approaching the richest sections of their property and large returns are expected.

Reconnaissance of Paracale.—Dr. Adams of the Division of Mines made a reconnaissance of the district last month. He also visited the new Nalisvetan and Guiniangan fields.

Surigao Placer Gold Fields.—A description of these fields appears in the *Philippine Free Press* and indicates that they give promise of large returns for investment.

"At present prospecting and development work is confined chiefly to the district around and to the north of Placer, about 25 kilometers south-east of the town of Surigao. A group of five or six Americans are testing the ground in that neighborhood and overtures have already been made by both New Zealand and American capital for an option on their claims.

"The ground in question is situated in and about the three creeks: Taganaan, Causuran, and Biga, only the first of which is shown on the map, the other two creeks lying just south of it. It is from the ground at the head of those creeks, which are described as tributaries of the Surigao river, that the rich nuggets kept as heirlooms in Spanish and Filipino families of Surigao were found. In his report Mr. Goodman, formerly of the division of mines, said some of these nuggets were as large as twenty dollar gold pieces.

"Besides the work being done near Placer reports have been received from time to time of some Americans working on the Agusan river, shown at the bottom of the map. During one of his trips south about a year ago Dr. Barrows, then director of education, said he found a lone American washing gold near the mouth of the Agusan and finding paying color in every pan. He had some natives working for him and said he was making a good living by even that primitive method."

The Masbate Field.—The work of development and investigation on the options held by the Philippine Exploration Company continues, and it is expected that the final report will be made several months before the options expire. The property is in splendid condition and values are practically available at the present time as a result of the large measure of well directed development work carried on by the owners during the last three years. Mr. Bridgeman, mining expert, representing the Shanghai capitalists interested, is in the Philippines looking after their interests in these options.

The Somosa Quartz Property in Paracale.—It is understood that New Zealand capitalists have secured an option on a number of quartz claims owned by Señor Somosa under an agreement to do a large share of development work and operate a quartz mill on a percentage basis. Several assays showing high values have been made, but up to the present time no definite average may be announced as the development of the property has not been sufficiently extensive to warrant a final report. The indications are that they offer a good prospect and warrant the expenditure of sufficient money for uncovering the hidden wealth.

Hydraulic Mining in Nueva Ecija.—A number of mining men interested in placer on the Pecco River are considering the advisability of installing a plant to develop some claims that show on reconnaissance rich deposits. The investigation of the property has not up to this time warranted the expenditure of large capital. The placer properties in this section have shown values from 60 centavos to ₱1 a cubic yard where the testing has been thorough, but very little work has been done on the Pecco section.

General Resume.—There are many reports of rich deposits being received in Manila from different parts of the islands, and judging from results where development has been carried out under competent supervision, many of these prospects will prove far from disappointing. However, few properties in the islands may claim to the title other than "prospect" and a prospect remains until the values and volume of paying deposits are known. This can only be secured by well directed effort and careful expenditure of money.

FAR EASTERN ENGINEERING, CONSTRUCTION, FINANCIAL AND COMMERCIAL NEWS

ELECTRIC RAILWAYS, LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIPS, ETC.

Underground Wires in Tokyo.—Official permission is extended to the Tokyo Electric Railway to supply lighting throughout the city by means of underground wires. It is estimated by the company that while the initial expense will be heavy, the annual maintenance will be greatly reduced. It is expected that there will be keen competition between the railway and the electric light company with a corresponding reduction in cost of service.

Wireless on Pratas Island.—The Viceroy of Canton has announced that it is his purpose to install a plant on this island at an expenditure of $100,000.

Electric Franchise for Zamboanga.—The Zamboanga Water Electric & Power Company has made an application for a franchise to the Philippine Legislature. The matter is being favorably considered.

Philippine Wireless Committee Appointed.—The following members were appointed by Executive Order of President Taft: Commissioner Elliott, Secretary of Commerce and Police, Colonel P. Scriven, U. S. Army, and Commander C. M. Knepper, U. S. Navy. They are to consider the substitution of a complete wireless service throughout the archipelago for the present cable service.

In this connection it might be said that it has been decided to instal wireless plants on Mount Mirador, Benguet, and Santo Domingo de Basco, Batanes, for meteorological purposes under the direction of the Philippine Weather Bureau.

Singapore Electric Tramways.—At the last annual meeting the chairman in his review of the year's operations expressed optimistic views of the company's future based on the result for 1909. He stated that the system had been benefited by the opening of the Singapore Bridge.

The Singapore receipts for the year under consideration were £64,234 4s. 2d., as against £60,020 7s. 7d. for 1908, showing an increase in the gross receipts of £4,213 16s. 7d. The ration of working expenses to those of receipts fell from 59.76 per cent. in 1908, to 52.63 per cent. in 1909, and the expenses per car mile fell from 3.99d. to 3.56d. The total running expenses were £613 less than in 1908, with an increased car mileage of 193,354 miles. The system carried in 1909 13,806 more passengers than in the previous year, but the passengers carried per car mile dropped from 6.54 to 5.96. The passengers per car mile show an increase, although the 1908 figure of 6.54 has not yet been reached. For the last three months the average number of passengers per car mile was 6.27, as against 6.17 for the first sixteen weeks in this year.

Shanghai Telephone Exchange.—The installation of the exchange in the new concrete building was completed last month. The testing apparatus, dynamos, accumulators, etc., are installed on the lower floor and the offices, switch boards and operators on the upper floor.

The power plant consists of a duplicate set of motors and dynamos for supply current for the telephones and lamp signals and also for ringing the subscribers' bells. Also a set of eleven accumulators, each with a capacity of 2160 amp hours at present, but which can be increased to 4000 amp hours by the addition of extra plates. The switchboard as completed consists of 17 sections equipped for 5600 subscribers' lines but with an ultimate capacity in the frame works for 10,000 lines. The total staff required to control and operate it including foreigners and Chinese is 130, the originating calls averaging some 35,000 per day. A special feature in this Exchange has been the adoption of enamel insulation on all wires used on the work for the purpose of securing freedom from cross talk owing to contacts from low insulation during the damp season and, although it has never been used for this purpose before in any Telephone Exchange either in Europe or in the United States, the results so far seem to justify the slight increase in cost. The length of wire used in the construction of the Exchange amounts to some 1,400 miles and the number of soldered joints and points of contact all of which must be electrically and mechanically perfect, amount to some 900,000. The contract was carried out by Messrs. Scott, Harding & Co., for their principals, the British Insulated and Helsby Cables, Ltd., whose works are at Prescott, Helsby and Liverpool. The first shipment was received September last. Mr. F. R. Baldock was in charge of the installation.

Pacific Mail Wireless.—This company has directed the installation of wireless plants on the China, Siberia, Mongolia, Asia and Manchuria.

Chinese Naval Telegraph Installations.—Prince Tsai Hsun, Commissioner of the Navy, has directed that telegraph lines be installed between Ninghai and Sihuwan. The latter port will be the Chekiang naval station for the fleet.

Tokyo Electric Light Expansion.—This company proposes to utilize its increase of yen 32,000,000 in capital for the carrying out of its second system of hydro-generation of electric current. This means the harnessing of the Katsura River from Tonegama to Hashijiri, a concession having been secured in combination with the Tokyo Electric Power Company. The water has a fall of 375 feet and will develop a power of 35,000 kilowatts.

Osaka Electric Enterprise.—There are four systems of electric lines in this district, none of which have made a very encouraging showing. The Kobe system cost yen 750,000 a mile and pays a dividend of 5%; the Hyogo cost yen 330,000 per mile and pays less than one percent; the Keihan cost yen 280,000 a mile and pays from 4 to 5% and the Kimen which cost yen 190,000 a mile pays 6%.

Tientsin Aviator Company.—A company has been promoted by Messrs. Galluser, Bochin, Bruschweiler, Chevallaz and Runacher of Tientsin forthe purpose of introducing the Bleriot monoplane in China. The first machine is expected by the end of the month from Paris.

Eastern Telegraph Company.—The report of the directors for the year ended December 31st, 1909, recommends after the usual contribution is made to the general reserve, the payments of interest, of dividend of 3.5% preference stock and three interim dividends of

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Many discouraging results have followed the early installation of mills in mining districts before sufficient ore was made available to keep it engaged or the property had been uncovered to the extent necessary to measure the volume and values and to make the proper selection of a site for the plant. It may be said that the Philippine mineral districts have now passed that juvenile stage where dreams are liable to cause heartaches in their passing. The development of prospects is now being carried on without any dream attachments and as might be expected with much more satisfactory results and fewer disappointments.

£1 5s. per cent each on ordinary stock to September 30, 1909, that the balance be made available for the payment of a final dividend of £1 5s. per cent. and a bonus of £2 per cent. making a total of 7% on the ordinary stock for the year.

THE EASTERN EXTENSION AUSTRALIA AND CHINA TELEGRAPH COMPANY.—The directors of the Eastern Extension Australiasa and China Telegraph Company, in their report for the half year ended Dec. 31 last, state that the gross receipts amounted to £315,034, against £306,889 for the corresponding half-year of 1908. The working expenses, including £17,997 for maintenance of cables, totalled £143,674, against £151,507 for the corresponding period of 1908, leaving a balance of £171,360. From this is deducted £3,841 for income-tax payable in England, and £15,048 for interest on debenture stock, leaving, as the net profit for the half-year, £152,471. After adding $59,844 brought forward from the previous half-year, there is an available balance of £211,315. One quarterly interim dividend of 1¼ per cent. has been paid for the half-year, and it is now proposed to distribute another of like amount on May 11, making, with the interim dividends paid or the first half-year, a total dividend of 5 per cent. It is also proposed to pay a bonus of 4s. per share, or 2 per cent., making a total distribution of 7 per cent. for the year 1909. The sum of £50,000 has been transferred to the general reserve fund, and the balance of £26,315 carried forward.

PUBLIC WORKS, DOCKS, WHARVES, BUILDINGS, ETC.

HANGYANG IRON WORKS' WHARVES AT SHANGHAI.—This company has been selecting a site and advertised for proposals to construct wharves for the handling of pig iron for ex-shipment.

SANITARIUM AT SIBUL SPRINGS.—The Philippine Government has appropriated the sum of ₱50,000 in addition to a former appropriation of ₱50,000 for the purpose of constructing the necessary buildings and making such improvements as are necessary to the establishment of a modern sanitarium. A resident physician will be appointed. The improvements will include the opening and construction of streets, the straightening out of the esteros, the construction of the central park and a pavilion at the entrance to the bathing establishment.

HARBOR FOR TOKYO.—With the proposal to construct a canal between Yokohama and Tokyo comes the more sanguine suggestion from the Tokyo Yomiuri urging the city of Tokyo to undertake the construction of a large harbor for Tokyo irrespective of the probability of the canal project being carried out. That journal suggests that with the opening of the Panama canal the increased trade would warrant the outlay which it estimates would be approximately yen 38,700,000.

TO REBUILD ZOJOJI TEMPLE.—This landmark in Shiba Park, Tokyo, which was recently burned, will be reconstructed at an outlay of yen 1,000,000.

THE EMPRESS DOWAGER'S PALACE.—The Empress Dowager recently commanded that a palace costing Tls. 6,000,000 be built for her use, but Duke Tsai Tse has advised against the expenditure for economic reasons.

CHEFOO HARBOR IMPROVEMENTS.—The plan adopted by the Chinese and foreign residents of Chefoo for the improvement of the harbor is now being considered at Peking. The main feature of the scheme is the construction of a sea-wall at an estimated cost of Tls. 1,500,000 to be repaid by wharfage dues and a five per cent. duty on domestic and foreign imports and exports.

THE TOKYO SEWAGE SYSTEM.—The scheme authorized recently by the city council will cost yen 33,660,000, half of which will be contributed by the Imperial Government. Of this amount yen 5,800,000 will be spent during the first five years beginning 1911 for the extension in the Asakusa, Shitaya and Kanda districts. The loan will be redeemed by a tax for street improvement and a sewage tax.

OPENING OF PORT ARTHUR HARBOR.—With the opening of Port Arthur to foreign trade it is stated that only the western portion will be made available. It is proposed to cut a waterway across the Tiger's Tail and to dredge an area of 300 acres to a depth of from 24 to 30 feet. Besides this, commodious wharves are to be built with railway connections. The eastern part of the harbor will not be opened for commercial purposes. The cost of these improvements is estimated at about yen 50,000,000 and will be borne by the Government and the South Manchuria Railway. The work will extend over a period of seven years.

THE TONGKU DOCKYARDS.—The Viceroy of Chihli recently inspected the newly completed Government Dockyards and reported favorably on the plants.

THE PEKING UNIVERSITY.—The Government has decided to expend Tls. 2,000,000 instead of Tls. 4,000,000 as was first reported in the construction of this important university and of this sum Tls. 500,000 will be made available annually. A Japanese engineer has been engaged.

FRENCH INDO-CHINA PUBLIC WORKS.—The proposal has been made by the *Temps* that the military contribution of francs 10,000,000 from the colony should be cut down one third and thus enable the colony to float a loan of francs 100,000,000, out of which Francs 45,000,000 could be utilized for irrigation works and the balance for the construction of branch lines of railways to afford better means of communication for isolated districts in the interior.

CEBU WATER SUPPLY.—The Philippine Legislature has authorized the issue by the Cebu municipality of ₱250,000 of public works bonds to assist in the installation of a gravity water supply to cost ₱500,000 when completed. The insular Government will lend ₱150,000 and the Cebu Municipality and the Province of Cebu will furnish ₱50,000 each to make up the deficiency. The water will be secured in a gorge about six miles from the city that forms a natural reservoir. The capacity of the proposed reservoir will be 400,000,000 gallons and the annual consumption of city and army post is estimated to be 700,000,000 annually. The minimum annual revenue is estimated at ₱75,000. The recent loss of over ₱8,000,000 by fire due to lack of water for fire protection was largely responsible for the agitation that resulted in having the scheme approved.

THE AGUS RIVER BRIDGE.—The construction of a 104 foot Pratt truss span bridge mounted on concrete abutments over the Agus River between Marahui and Dansalan, Moro Province, is under way. The river has a swift current with rock bottom so that the truss has to be floated into position on account of the impossibility of driving piles for false work.

CHINCHOU HARBOR SCHEME.—It is reported from Peking that the government favors the construction of a harbor at Chinchou at a cost of Tls. 7,000,000 and to accept an offer made by American capitalists to furnish the required funds. This port will be the terminus of the proposed Chinchou-Aigun line and will be the only Chinese ice free port serving as an outlet for Manchuria.

THE HUANGPU CONSERVANCY.—There is some discussion over the future of the conservancy works as to whether the original plans will be carried out or that the maintenance of Astraea Channel be considered sufficient to meet the requirements of the shipping community. It would appear that Conservancy Board has indicated that it deems all but the provision for maintenance to have been completed by the recent notice given M. de Rijke of the termination of his contract on November 30 of this year. The board announced that this action was necessary on account of shortage of funds. A protest has been filed by the Shanghai Branch of the China Association against the abandonment of the scheme in any part.

Commenting on the situation, the *N. C. Daily News*, says;

"The position is complicated owing to the omission to determine whether the sum, originally agreed upon by the Chinese and Foreign Governments, of Tls. 9,320,000, spread over twenty years, was sufficient for the purpose that it was intended to serve. If the Conservancy Board finds that there is little chance of its receiving the money necessary to complete M. de Rijke's whole scheme and that the community must be satisfied with the opening and maintenance of the Astraea Channel, then it is well advised to reduce its expenditure as soon as possible to the minimum point compatible with the adequate supervision of Astraea Channel. Clearly this is not the work for M. de Rijke to undertake, as it can be done by a junior engineer, and the Board would not insult him by asking him to stay for such a purpose. But if some arrangement can be arrived at by which provision is to be made for the completion of the whole conservancy scheme—including the Normal Lines, the rounding-off of Pheasant and Pootung Points—it will always be possible, we hope, to retain M. de Rijke's services for the community.

SHIPBUILDING, GENERAL MARINE AND FISHERIES

BIG JAPANESE DREDGER.—The Japanese Government has placed an order with the Uraga Dock Company for the construction of a dredge of 1,200 tons displacement, to be used in the Shimonoseki Straits, at a cost of yen 340,000. It will have a capacity of 800 tons an hour and work to a depth of 40 feet.

THE NIPPON YUSEN KAISHA.—The net profit for the half year ended March 31st amounted to yen 1,703,500 after deducting yen 935,025 for depreciation, yen 462,017 for insurance and yen 603,853 for the structural repair fund. Including the balance from former term there were yen 2,103,206 available for distribution, out of which the directors proposed that yen 85,124 be added to the Reserve Fund, raising it to Yen 2,868,456; and that Yen 59,465 be allowed as Directors' and Auditors' fees. From the remainder the Directors recommend a Dividend at the rate of Ten per cent. per annum, which will absorb Yen 1,100,000.

The balance, Yen 858,616, will be carried forward to the next account.

BIG SHIPPING COMBINE.—The Royal Mail Steam Packet Company has purchased the whole of the share capital of the Pacific Steam Navigation Company and have thus secured control of an additional fleet of 44 vessels aggregating a tonnage of 182,930 tons approximately. The fleet of the Royal Mail Packet line comprised 48 steamers with a tonnage of 205,500 approximately.

SNAGGING CRAFT FOR PERAK WATERS.—The *Pinang Gazette* announces the launching of a vessel from the Eastern Engineering Company's works at Weld Quay, which is to be used in removing snags from the rivers of Perak. She is 40 feet long, 15 foot beam and 5 ft. 9 in. deep. It is fitted with heavy derricks, shear legs, winches, etc., with a capacity to raise 20 tons.

P. & O. DIVIDEND.—The directors of this company announce a dividend of 5% on preferred and 7% per cent interim on deferred for the half year ended March 31st, 1910.

KOREA'S FISHING INDUSTRY.—The Asahi Shimbun states that there are 3,898 Japanese fishing boats operating in Korean waters manned by 16,644 fishermen and the output of fish amounts to a gross value of yen 3,760,000,

while the Koreans have 12,411 boats manned by 68,520 men with a total catch to the value of 3,139,000.

New Type of Turbine.—Chief Engineer Kubota of the *Chefoo Maru* has designed a new type of turbine engine which is reported to have been tried out successfully on his vessel. A launch of the South Manchuria Railway is being equipped with this Japanese invention. Mr. Kubota has been working on this improvement for the last four years.

Russian Steamers Race.—"A race between the Russian East Asiatic Co.'s S. S. *Sishan* and Russian Volunteer Fleet S. S. *Kostroma* has just taken place to secure the first shipment of Congou Tea for the Siberian Railway," says the *Hankow Hews*. "Both vessels left Vladivostock on the 26th May, the Volunteer steamer at 4 p. m. and East Asiatic vessel at 5, arriving in Hankow on 3rd inst., the S. S. *Sishan* at 2 a. m., 7½ hours ahead of the competing vessel."

The Siam Steam Packet Company.—This company has increased its capital stock from Ticals 150,000 to Ticals 240,000.

Hongkong Shipping.—"Last year 527,280 vessels of 34,380,845 tons entered and cleared at Hongkong" says the *Hongkong, Post*. "Although a decrease on the previous year of 4,832 vessels, the tonnage shows an increase of 215,604 tons. Of this total 43,794 vessels of 22,415,125 tons were engaged in foreign trade, the percentage of British ocean-going vessels being 9.3 in number and 34.5 in tonnage, as against 9.8 and 35.1 respectively for foreign ocean-goers. The figures are truly amazing, and show the magnitude of Hongkong's importance as a world port. In the past twenty years the average tonnage of ocean vessels visiting Hongkong has risen from 1,182 tons to 2,390 tons, in other words the average has doubled itself. The loss of the Powan and Yingking, the withdrawal of the Hoi Sang and Kwang Fat and the laying up for a period of the Tak Hing, adversely affected the river traffic to the extent of 585,728 tons."

The Salvage Steamer Protector.—This vessel which recently stood by to assist in the refloating of the American Drydock Dewey gave an exhibition in Manila Bay last month. The vessel is owned by the M. Z. Svitzers Salvage Enterprise of Copenhagen and was built in 1905. She is of 542 tons gross and equipped with triple expansion engines of 1150 h. p. with a speed of 13 knots. Her powerful centrifugal pumps have a capacity of 6,000 tons of water an hour. Besides this she is equipped with the most modern and powerful salvage gear designed for work in the tropics.

Rapid Transit of Silk.—The Steamship *Minnesota* sailed from Yokohama on the afternoon of May 22nd and arrived in Seattle on the morning of June 3rd, making the voyage in 11 days and 14 hours. This is the record for sailing. The s. s. *Tambo Maru* of the Nippon Yusen Kaisha delivered a similar cargo at Seattle in 15 days and 6 hours and it was carried by rail over the Great Northern Railway connections to New York in 4 days, 18 hours and 15 minutes from Seattle. This is the record by rail.

New Japanese Destroyer.—The keel of the destroyer Yamakatze was laid at the Mitsu Bishi Dockyards & Engineering Works last month. This vessel is to have a displacement of 1,150 tons, a speed of 33 knots, and 21,000 horse power. In every point she is second to none but the *Swift* of Great Britain which holds the first rank among the destroyers of the world. She is to adopt the turbine system and to be fitted with 2 three-inch guns and 2 torpedo tubes.

The *Yamakaze* is to be built according to practical lessons gained in actual warfare. She will be launched at the end of this year or early next year and will be placed in commission in May next year. When she is ready for sea, she will form a flotilla with the *Sazanami*, *Kagero* and six others.

MINES, MINERALS AND THE METAL TRADE, MACHINERY, ETC.

F. M. S. Tin Returns.—The total output for April aggregated 11,262 piculs for the month of April. The total exports for the first four months of this year amounted to 239,189.43 piculs a falling off of 6,999 piculs compared with the corresponding term last year. The values, however, show an increase for the same period of $1,740,344 compared with 1909, and the increase in duty is represented by $249,893.

Large American Order for Eastern Petrol.—The *Free Press* of Singapore announces that the Shell Transport and Trading Company has booked an order for 10,000,000 gallons of petrol from the United States and at a 25% advance on the ruling prices in Great Britain. The demand for gasoline for motoring in the United States is believed to have created a shortage in the market.

The Pensihu Colliery.—The organization of this company by Japanese and Chinese capitalists is reported effected. The capital is $2,000,000 Peiyang silver, of which each nationality will subscribe an equal share. The sum of $350,000 will be disbursed at once and the balance paid in instalments. It is reported that the Viceroy of Manchuria has purchased the interests of the Okura company in the colliery by means of a loan from the Yokohama Specie Bank for Tls. 150,000. The Chinese Government is to receive a royalty of 25% of the net profits.

The British Borneo and Burma Petroleum Syndicate, Ltd.—This company, which was recently organized as the result of the increase in capital of the British-Borneo Petroleum Syndicate Ltd. to £100,000 and a vote to change the name of the latter at the recent extraordinary meeting of the shareholders of London, is perhaps the most promising of oil ventures in the East. It controls 440 square miles of territory in British North Borneo, of which 160 miles are oil bearing. In Burma the company controls 10 blocks of one square mile each with the right to take six more blocks, all in the oil bearing district where the Burma Oil Company is operating. The British North Borneo Oil lands are situated six miles from Labuan where a coaling station is located and where an oil storage will be installed. Extensive boring operations are under way and the samples taken from this area show 30 per cent. petrol, 36% of high grade illuminating oil, 17% of spindle oil and 15% of extremely flash-point oil suitable for the manufacture of superior lubricants. The company expects to supply oil burners in Far Eastern waters with its second grade product. The lease of these lands run for 999 years and under the most favorable conditions.

Raub Gold Mine.—The returns for the four weeks ended May 21st amounted to 1,150 from the Bukit Koman and 95 ounces from the Bukit Malacca.

Japanese Coal to Alaska.—The Alaskan Northern Railway have announced that it has purchased 500 tons of Japanese coal for use as fuel during the summer months.

The Rawang Coal Prospect.—The following notice appears in the form of an advertisement in the Government *Gazette*:

"It is hereby notified that, a seam of coal having been discovered near the 26th mile on the Rawang and Kuala Selangor Road, the Government is prepared to consider applications from individuals or syndicates for exploiting and working the same. The area available for alienation lies within a radius of 3 miles from the existing bore."

Railway Steel for the Chinese Section, Hongkong-Canton.—Several cargoes of steel rails from the Hangyang Iron Works have been discharged at the railway wharf at Blackhead's Point to be transported from the Kowloon end to the point of construction. One cargo included 1,000 tons of steel.

Shangtung Gold Mines.—The Governor of Shangtung has petitioned the Peking government to take steps to develop the deposits of gold in the mountains of Lang and Hsien. A survey has been ordered. Sometime ago the British Minister asked that these mountains be included in the jurisdiction of Wei-Hai-Wei, but this concession was not made. Recently many foreigners have asked for concessions in that region.

Yunnan Tin Mines.—A project is on foot to develop the old tin mines of Koju in this province. It is reported that a company with a capital of Tls. 2,000,000 has been organized by Chinese for this purpose. Modern machinery is to be installed with a capacity of 40 tons daily. By the old methods only 6,000 piculs of tin were saved annually.

The Oriental Consolidated Mining Company.—This company which controls the largest and most successful gold mining enterprise in Korea is capitalized at $5,000,000 and the output from its different properties aggregate approximately $1,500,000 gold annually. The two principal mines are the Taracol and the Tabowie. These concessions are about three days' journey from Seoul in the province of Unsan. Besides these properties there are many groups of rich prospects in the process of development. The company has paid over 10% annually for years and with the extension of the plant the prospect for increased profits is very bright.

Duff Development Company.—The output from the three dredgers operated by this company for the first quarter this year amounted to 1,380 ounces compared with 3,600 ounces during the corresponding period, 1909.

The Hoden Oil Gushers.—The reports from this company's oil wells are to the effect that the output of three of them increased recently from 8,000 gallons to 28,000 gallons without warning and a corresponding increase in output has been noted in less active wells.

COMMERCIAL, FINANCIAL AND MISCELLANEOUS

Chinese Support for Parliament.—The announcement is made that Chinese, resident in foreign countries, have expressed their willingness to subscribe the sum of Tls. 80,000,000 as a contribution to the Chinese Government upon the opening of the Imperial parliament.

The Nanyang Exhibition.—The most favorable reports have been received upon the extent and comprehensiveness of this exposition which was opened June 5th. The railway facilities from Shanghai aided greatly in making it a success and the exhibits were representative of the many countries participating.

Philippine Bureau Transfer.—The Bureau of Agriculture has been transferred to the Department of Education.

Typewriting on Bills of Exchange.—A circular has been issued by the Exchange Bankers Association calling attention to the risk involved in typewriting particulars in bills of exchange instead of using pen and ink. The difficulty of detecting alterations involves a serious risk and the Association desires cooperation in reducing this risk by abandoning the use of the typewriter in this particular.

Tea Advertising Subsidy.—The Inspector General of the Chinese Imperial Customs by his personal representations has secured the continuation of the annual subsidy of Tls. 12,000 from the Peking Government for the China Tea Association.

American Businessmen's Itinerary.—The party of American businessmen who propose visiting China in September will consist of forty-five representatives of nine chambers of commerce of the Pacific States and will land first at Shanghai and proceed to Nankin, Hankow,

Peking, Tientsin, Newchang, Mukden and Port Arthur, whence they will go to Foochow, Amoy, Canton and Hongkong. Six weeks will be spent in China.

NAVAL ICE PLANT AT OLONGAPO.—The Navy Department has decided to establish an ice plant at Olongapo Naval Station to be four times the capacity of the present plant, operated by the Marine Corps.

NEW PHILIPPINE SAWMILL.—The Cadwallader Gibson Lumber Co. has completed the installation of a sawmill on their concession at Limay, Bataan, with a capacity of 90,000 feet daily. This makes two mills operating under the direction of this company which will have an aggregate capacity of 150,000 feet.

NEGROS SUGAR SHORT.—The report from Negros places the 1910 crop at 90,000 piculs as against 106,050 for 1909.

COPRA STEROLIZING EXPERIMENTS.—Consul General Du Bois of Singapore states that experiments are being made by French experts in the preservation of copra in transit from the development of rancidity. Sterolizing with a sulphur preparation has been found very satisfactory and is reported to preserve the copra from mould for several years.

YOKOHAMA SPECIE BANK AS GOVERNMENT MONETARY ORGAN.—The details of the provisions of the charter granting the bank powers in Manchuria are given by the *Japan Times* as follows:

(1) "The Yokohama Specie Bank is instructed to act as a money organ in Manchuria instead of establishing a special money organ, so that the Bank should take measures to give facilities for the trade between Japan and China and various other monetary facilities. (2) The Bank should increase the limits of loans issued on immovables on portage and make investments in such business undertakings for the development of Manchuria as are thought promising, at possible lowest rate of interest. (3) The rate of discount and the remittance commission should be made as low as possible. (4) A special investigation organ should be established for fixed investments. (5) Branches or sub-branches should be established in Manchuria when such establishment is thought necessary by the Government. The capital for fixed investment is said to be fixed at about 3,000,000 yen.

CHINA'S MONETARY REFORMS.—*The Shenpao* states that the Board of Finance has issued regulations reorganizing the currency of the empire. Among them it is provided that the Yuan will be the basis of Chinese money (silver). The word is the equivalent of the Japanese yen. It will have a weight of seven mace and two candarin or about the weight of the yen in silver. The yuan will be of 90 per cent. fineness while the fifty and twenty-five cent pieces will be of 80 per cent. and the ten cent pieces 65 per cent. fineness. The subsidiary coins will be known as five chueh (fifty cents), two chueh five feng (twenty-five cents), one chueh (ten cents) in silver, and five feng (five cents) in nickel, two feng (two cents), one feng (one cent), five li (five cash) and one li (one cash) in copper. The Yuan, chueh, feng and li are in the decimal system respectively and the rate is fixed and is not allowed to be voluntarily lowered or raised.

THE KEDAH ESTIMATES.—The revenue estimates for the year amount to $1,490,478 as against $1,240,276 actual last year and the expenditure estimates $1,568,607, including revokes, as against $1,005,328 actual last year. The following is the distribution of expenditure under the different heads:

State Council, $62,019; Police, $118,604; Land, $45,225; Survey, $35,650; Prisons, $32,-674; Medical, $30,964; Posts and Telegraphs, $21,854; Education, $20,306; Chandu Monopoly, $245,144; State Pensions, $22,960; Allowances to members of the Ruling House, $54,890; Interest on loan, $108,838; Miscellaneous, $179,000; Public Works, $384,430.

HALL & HOLTZ INCREASE CAPITAL.—At a recent extraordinary meeting of the shareholders the capital of this company was increased to $560,000 Mex. by the creation of 7,000 additional shares at $20 mex. each.

INCREASE IN PHILIPPINE EXPORTS.—A comparison of exports to the islands from the United States between the first eight months of the fiscal year 1909 and the same period in the fiscal year 1910 show an increase of $4,500,000 in the latter year.

THE MANILA COMMERCIAL COMPANY.—This company has purchased the plant, assts and good will of Messrs. Baer Senior & Co.s Successors, including the La Yebana Cigar & Cigarrette Factory as a going concern. The company has been incorporated under the laws of the Philippine Islands and will continue business as taken over with increased capital and facilities and with the same management as heretofore. Mr. A Determan is President and General Manager and Mr. P. Meller, Vice-President and Assistant General Manager.

RUSSIAN TOURISTS TO VISIT JAPAN.—A party of fifty professors and students from Tomsk, Siberia, will pay a visit to Japan in August.

TA CHING BANK IN TALIEN.—The ministry of Finance has decided to open a branch of the Ta-Ching Bank at Talienwan.

JAPANESE MINISTRY FOR THE COLONIES.—It is reported from Tokyo that the Government proposed to establish a department to oversee the affairs of Korea, Formosa and Saghalien.

EMIGRATION TO HEILUNGKIANG.—Arrangements are being made for the transportation and encouragement of 5,000 natives of the province of Hupeh to settle in the province of Heilungkiang.

OPENING YENCHI TO FOREIGN TRADE.—It is proposed to appropriate the sum of Tls. 400,000 out of the customs receipts of the port of Canton to defray the expenses of opening the port of Yenchi, situated 200 miles south-east of Kirin, to trade.

STRUCK OFF HONGKONG REGISTRY.—The Gazette has announced the following companies struck off:

The Shanghai Carrying Company, Ltd; The Hongkong Coal and Minerals Company, Ltd.; The Tung Sang Yu Newchwang Bean Oil Manufacturing Company, Ltd.; The Man Ying Land Investment and Agency Company, Ltd.; The Chungking Trading Company, Ltd.; Tours of the World (Eastern), Ltd.; The Hoi Sun Printing and Publishing Company, Ltd.; The Sing On Steamship Company, Ltd.; Cottam & Company, Ltd.; The Hongkong and South China Trading Company, Ltd.; The Heng Fung Flour Mill Company, Ltd.; The China Fishing Company, Ltd.; The Kwong Shun Steam Boat Company, Ltd.; The Oriental Union Fire Insurance Company, Ltd.; The Hill Remedy Company, Ltd.

PACIFIC TANK COMPANY EXPANDS.—The business and manufacturing plants of the National Wood Pipe Company and Pacific Tank Company have been consolidated. In future all business of the National Wood Pipe Company and Pacific Tank Company will be conducted under the name and style of Pacific Tank & Pipe Company. The officers and employees of both Companies have been retained and all contracts and other obligations of every nature are assumed by the Pacific Tank & Pipe Company.

The consolidation has been brought about by the increasing demands for the products of both companies, with a view of concentrating our efforts and specializing on water, oil, wine and mining tanks, machine banded and continuous stave water pipe, and irrigation supplies.

The company has just completed the largest pipe and tank factory in the world at Portland, Oregon, and with their other factories at San Francisco and Los Angeles being enlarged to increase the productive capacity of all departments, enables them to execute orders with dispatch.

CATALOGUES RECEIVED

Style Book No. 24 of Murray Vehicles, Harness and Saddles. Messrs. Wilber H. Murray Mfg. Co., Cincinnati, Ohio. John R. Edgar & Co., Manila, Book and Stationery. General Catalog, Books, Office Supplies.

The Ferro Monthly by the Ferro Machine & Foundry Company, Cleveland, Ohio. Published in the interest of those who sell and those who use the Ferro motors.

The Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, Engine and Turret Lathes, Catalogue No. 21.

REVIEWS

Hydraulic Mining, with Supplements on Roads and Motor Traction for Mining by C. C. Longridge, M. Inst. Mech. E. The Mining Journal, Price 20*s*. net.

This is the most comprehensive work on practical mining that has been issued for many years and will be found of great interest in every department of the mining industry from the prospector to the director of a mining company. It includes exhaustive information on the classification, test and valuation of alluvials with descriptions of different methods of applying water power and of working alluvial deposits under almost every known condition. The work is appropriately illustrated with drawings and photographs.

The Recognition of Minerals, by C. G. Moor, M.A., F.I.C. The Mining Journal, London, Price 7-6 net.

This work is a collection of notes and simple tests for the use of travellers and prospectors gathered in a long experience in the study of minerals. The author was formerly resident chemist to the Ashanta Goldfields Corporation, late public analyst of the City of Exeter, public analyst to the County of Dorset and the borough of Poole. The work is very exhaustive and contains monographs on geology, Ore Deposits, Etc., by Donald A. MacAllister, Assoc. R. M. S., F.G.S.

Cost Accounting Pathfinder, by Frank E. Goodwin, Associate Editor *Farm and Machinery*. Midland Publishing Company, St. Louis, Mo.

This little book is designed to impress upon the merchant the importance of maintaining a record of the exact cost of conducting his affairs of trade, and the substitution of old methods of guess work for modern ways of arriving at the actual cost. It is comprehensive and should be in the library of every progressive business man.

Ornamental Concrete Without Molds, by A. A. Houghton, a wellknown authority on concrete construction. The Norman W. Henley Publishing Company, New York. Price. $2.00 gold.

This is announced as a practical treatise explanatory of a system of molding ornamental concrete units with templates and contains additional information on the proper proportion of concrete for ornamental work, the proportionate size of the various units and the reinforcement of work. It contains everything that a concrete worker needs to know to perfect the many styles of ornamental concrete work without the purchase of expensive molds. An interesting collection of drawings illustrative of the subject is included.

FOR SALE

500 H. P. WHEELER CONDENSOR.—One Wheeler Condenser, similar to illustration of C. H. Wheeler Condenser & Pump Company's Catalogue No. 7, Page 7. To condense steam from battery of boilers of 500 h. p. capacity. Second hand,—but in excellent condition, complete with pumps, etc.

No reasonable offer refused.

B. A. GREEN,
General Broker, Manila, P. I.
Cable Address: Bag.

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, June 10, 1909.

STOCK.	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND.	Approximate Yield per cent per annum at Present Quotation	CLOSING QUOTATIONS
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	120,000	$125	$125	g £1,500,000 s $15,500,000 i $250,000	$2,028,988	31-12-09	£2. 5/- for half year ending 31-12-09, @ ex 1/9½ = $25.11	4	940 sales £90
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	c £4,099 $400,000	$34,167	31-12-09	$2 (London 3/6) for 1903	....	$76 buyers
MARINE INSURANCES.											
Canton Insurance Office Ld.	1881	$2,500,000	10,000	$250	$50	$1,560,000 j $254,583 u $302,799	Nil.	31-12-08	$10 for 1908	7	$177½
North China Insurance Co., Ld.	1903	£150,000	10,000	£15	£5	g £125,000 s Tls. 225,000 u Tls. 335,253 f Tls. 146,586	Tls. 207,572	30-6-09	Final of 7/6 making 15/- for 1908.	....	Tls. 110 sellers
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	s $3,000,000 g £90,000 f $287,984 j £1,449,735 u $713,985	$287,984	31-12-09	Final of $20 per share, making in all $50 per share for 1908, and an int. div. of $30 per share for 1909	5½	$825 sal. & sel.
Yangtsze Ins. Association, Ld.	1889	$1,200,000	12,000	$100	$60	$1,000,000 j $294,405 $199,234	$707,637	31-12-08	$12 and bonus $3 for 1907	7	$230
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 x $550,348 f $61,168	$438,406	31-12-09	$6 and bonus $2 for 1908	7½	$114 buyers
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,460,000	$426,218	31-12-09	$27 for 1908	8%	$347 buyers
SHIPPING.											
China & Manila Steamship Co., Ld.	1882	$750,000	1) 30,000	$25	$25	i $57,734	Dr $3,777	31-12-09	$4% for 1906	....	$7½ sellers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$230,000 i $100,589	Nil.	30-6-09	$2½ for year ending 30-6-1908	....	$33 sellers
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	e $250,000 d. i. $627,500 f $103,545 $ 19,106	$20,766	31-12-09	Final of $1½ for 1909	7¾	$29½ sellers
Indo-China Steam Navigation Co., Ld. (Preferred) Do. Do. (Deferred)	1882 m	£600,000	2) 60,000 2) 60,000	£5	£5	i £148,891	£15,162	31-12-08	6/- for 1907 on pref. share only at ex. 1/9 11/16, $3.154	....	$68 sales
"Shell" Transport & Trading Co., Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£720,000 i £100,000	£192,994	31-12-08	3rd interim of 2/- per share (coupon No. 12) making in all 4/- for 1908, and interim of 1/- for account 1909	5%	94/-
"Star" Ferry Co., Ld.	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$65,000 i $48,980	$3,121	30-4-09	$1.00 50 cts. for year ended 30-4-09	4 3½	$24½ $14 sellers
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	e $520,000 r $83,620	Dr. $8,090	31-12-09	$10 per share for 1909	3½	$167 sellers
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	Dr. $101,851	31-12-09	$3 for 1897	....	$26 sellers
Perak Sugar Cultivation Co., Ld.	—	Tls. 350,000	7,000	Tls. 50	Tls. 50	Tls. 100,000	Tls. 6,302	31-8-09	Tls. 10 for year ending 31-8-09	....	Tls. 900 sellers
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	d £215,000 h £84,390	£1, 5	28-2-09	Final of 1/6 making 3/- for 09	7	Tls. 18
Headwaters Mining Co.	1908	₱600,000	28) 60,000	₱10	₱10				First year		₱10 buyers
Raub Australian Gold Mining Co., Ld	1892	£200,000	150,000 50,000	£1 £1	18-10 £1	£4,873	Dr.	..	1/2 per share, 13th div	....	$7½ sellers
DOCKS, WHARVES AND GODOWNS.											
Fenwick (Geo.), & Co., Ld.	1889	$450,000	s 18,000	$25	$25	$25,275	Dr $8,460	31-12-09	$1¾ for year ending 31-12-06	....	$10
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$3,000,000	60,000	$50	$50	$550,000 t $31,993 i $40,000	$264,847	31-12-09	$2½ for 1909	5	$57 buyers
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	i $88,412 v $221,000	$132,765	31-12-09	Interim of $1½ for account 1909	..	$56 sales
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	Tls. 6,261	30-4-09	Interim of Tls. 2½ for account 1910	6½	Tls. 78
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	36,000	Tls. 100	Tls. 100	b Tls. 697,257 r Tls. 70,000 e Tls. 125,000	Tls. 9,222	31-12-09	Final of Tls. 4 for 1909	7	Tls. 121
LANDS, HOTELS AND BUILDINGS.											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 135,000	Tls. 4,314	29-2-09	Tls. 6 for year ending 29-2-09	5¾	Tls. 104
Central Stores, Ld.	....	$751,845	16) 50,123	$15	$15	n. $1,000	$24,641	31-12-08	$1.20 on old & 60 cts. on first new issue	....	$16 buyers
Hongkong Hotel Co., Ld.	1866	$600,000 $400,000	12,000 8,000	$50 $50	$50 $25	$648,975 r $10,000	$1,277	31-12-09	$2.60 on old shares, $1.30 on new shares, for ½ year ending 31-12-10	....	$107½ sales $83½ ex div. new
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	$27,971	31-12-09	Final of $3½ making $7 for year ending 31-12-1909	6½	$101 sellers
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $226,945 20) $25,856	5,471	31-12-09	45 cents for 1909	7½	$8½ sellers
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$269	31-12-09	$2½ for 1909	5	$31½ buyers
Shanghai Land Investment Co., Ld.	1888	Tls. 3,900,000	78,000	Tls. 50	Tls. 50	Tls. 1,523,045 e Tls. 300,000	Tls. 63,969	31-12-09	Final of 6% bonus Tls. 1 for 1909	6¾	Tls. 106 sales
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,958	31-10-09	Final of $1.80 for 1909 making in all 3.80 per share for 09	8¾	$40 sellers
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 250,000 Tls. 40,098	Tls. 10,991	31-10-09	Tls. 11 for year ended 31-10-09	8½	Tls. 130
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	e $20,000	$26,297	30-7-09	50 cents for year ending 31-7-08	..	$6½ sellers

FAR EASTERN STOCKS AND QUOTATIONS—(Continued.)

STOCK.	When Established	CAPITAL.	NO. OF SHARES.	VALUE.	PAID UP	RESERVE	AT WORKING ACCOUNT.	DATE.	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.	CLOSING QUOTATIONS
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 175,000	Tls. 8,372	30-9-09	Tls. 7½ for year ending 30-9-09	---	Tls. 62½
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	8,000	Tls. 100	Tls. 100	none	Tls. 4,829	31-12-08	Tls. 6 for 1909	....	Tls. 73
Soy Chee Cotton Spinning Co., Ld	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	Tls. 31,172	Tls. 31,173		Tls. 25 for 1909	---	Tls. 250
MISCELLANEOUS.											
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377.10s.	11) 8,604	12/6	12/6	£1,500	£682	31-12-08	15% for 1908		$10 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	$40,000	Nil.	31-12-08	5% for 1909	10	$10½ sellers
China Light & Power Co., Ld.	1901	$550,000	50,000	$10	$10	none	$46,483	31-7-09	60 cents for year ending 28-2-06		$1.80 sellers
Do. do. Special Shares	1907		17) 50,000	$1	$1						
China Provident Loan & Mortgage Co., Ld.	1898	a $1,250,000	7) 125,000	$10	$10	$100,000	$2,602	31-12-09	80 cents for 1909		$18¾ sellers
Dairy Farm Co., Ld.	1896	$300,000	40,000	$7½	$6	l $10,000 / $10,000	$1,850	31-7-09	$1.20 for year ending 31-7-09	8½	$19 buyers
Green Island Cement Co., Ld.	1897	$4,000,000	400,000	$10	$10	$14,000	$4,290	31-12-09	Final of 40 cts. making in all 75 cts. per share for 1909	10	$7½ sellers & sales
H. Price & Co., Ld	1907	$120,000	19) 15,000	$10	$10	$5,000	$670	31-12-08	80 cents for year ending 31-12-08	8	$12
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$11,798	28-2-10	A dividend of $1.20 per share and a bonus of 10 cents	6	$19½ sellers
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	$25	k $150,000	$12,662	31-12-09	Final of $8 per share making in all $10 1909	10	$160 sellers
Hongkong Rope Manufacturing Co., Ld.	1883	$600,000	$60,000	$10	$10	$40,000	$9,176	31-12-09	Final of $1 making in all $2 for 1909	8½	$21½ sellers
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	25,000	Glds. 100	Glds. 100	Tls. 547,500 / f Tls. 63,914 / 21 Tls. 547,500	Tls. 316,682	31-10-08	Interim of Tls. 12½ for 1910	8½	Tls. 1400
Peak Tramways Co., Ld.	1907	$750,000	25,000	$10	$10	$20,000	$2,204	30-4-09	80 cents on fully paid shares & 8 cents on $1 paid shares for year ending 30-4-09	6	$14½
Do. (New)			50,000	$10	$1					8	$1.50 buyers
Philippine Co., Ld.	1904	$750,000	75,000	$10	$10	none	Ps. 18,640	31-12-08	None	---	$10 buyers
Robinson Piano Co., Ltd.	1900	$200,000	22) 4,000	$50	$50	$5,000	$61,138	31-8-08	6% for ½ year ending 30.9.07	---	$50 sellers
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 / w Tls. 75,000	Tls. 5,250	31-10-08	Final of Tls. 5 making Tls. 8 for 1908	4¾	Tls. 315 sellers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	Dr. $31,096	31-8-09	None	---	$25 buyers
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	$63	31-5-09	40 cents for year ending 30-5-09	7	$5 buyers
Union Waterboat Co., Ltd.	1905	$500,000	15) 50,000	$10	$10	w $11,956	..	31-12-08	60 cents for year-end. 31-12-1908	5	$9 sellers
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$46,000	$342	31-5-09	60 cents per ordinary share for year ending 31-5-09	6½	$11½ sellers
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	e) $300,000 / $25,000	$2,613	31-12-08	Final of 30 cents making 60 cents for 1908	6¾	$6 buyers
Weismann Limited	1904	$30,000	3,000	$10	$10	$12,250	$67	31-7-09	10 per cent for year endg. 31.7.08.	---	$10 buyers
William Powell, Ld.	1901	$105,000	15,000	$7	$7	none	$782	30-6-09	Final of 30 cents making 80 cents year ending June 30th 1906	...	$3 sellers
RUBBERS											
Allagar Rubber Estates, Ltd.	1909	£85,000	29) 750,000	2/-	2/-	....	....	---	----------	---	7/-
Anglo-Malay Rubber Co., Ltd.	1905	£150.000	1,500,000	2/-	2/-	....	....	....	Interim of 6d for a/c 1910	---	32/-
Balgownie Rubber Estate, Ltd.	1905 ††	$200,000	‡‡ 20,000	†† $2	†† $2	$7,400	$11,205	31-3-09	20% Interim for 1909	---	$24 [S'pore]
Castlefield Rub. Ld., [fully pd.]	1906	£35,000	27) 32,650	£1	£1	none	....	---	----------		120/-
Damansara (Selangor) Rub. Co.	1906	£110,000	25 110,000	£1	£1	nil.	£2,220	f 31-12-08	2/6 for 1909	---	185/-
Golconda Malay Rubber Co.	1907	£80,000	26 80,000	£1	£1	nil.	nil.	---	----------	---	140/-
Highland & Lnd. Para R. Co.	1906	£310,000				£8,784	....	....	7½% for 1909 (interim.)		
Do. Do. [fully paid]			=181,454	£1	£1						155/- ex rights
Do. Do. [partly paid]			123,546	£1	15/-						Nominal
Kamuning (Perak) Rb. & Tin Co.	1909	£200,000				nil.	nil.	....	----------	---	11/- prem
do do A Shares			950,000	2/-	1/-						
do do B Shares			105,000	£1	£1						
Kuala Lumpur Rubber Co., Ltd.	1906	£180,000	180,000	£1	£1	.... £4,000	1,82	....	A final dividend of 2/- for 1909	....	225/-
Linggi Plantations, Ltd. (ord.)	1895 Reconst	£100,000	× 900,000	2/-	2/-	....	....	....	----------	---	65/-
Do. Do. (7% pref.)			10 000	£1	£1						Nominal
Ledbury Rubber Estates Ltd.	1908	£125,000	§§ 60,000	£1	£1	----	----	....	----------	---	112/6
Do. Do. (contrib.)			§§ 40,000	£1	7/6						58/6
Sagga Rubber Co. Ld.	1903	£20,000	24) 2,000	£1	£1	nil.	nil.		----------	---	320/-
Sandycroft Rubber Co.	1904	$100,000	50,000	$2	$2	$20,000	$1,275	31.1.08	Interim of 30% for 1909	---	$43 b. ex rights & div.
Sekong Rubber Co., Ld	1908	£80,000	27) 80,000	£1	12/6	nil.	nil.	---	----------	---	40/- prem.
Shelford Rubber State Ld.	1906	£65,000	65,000	£1	£1	nil.	£836	31.12.08	3% for 1908	---	85/-
Singapore & Johore Rb. Co., Ld.	1903	$250,000	2,500	$10	$10	nil.	nil.	---	----------	---	$22
Sungei Choh. Rb. State Co., Ld	1907	£45,000	45,000	£1	17/-	nil.	nil.	---	----------	---	122/6
Sungei Kapar Rubber Co.	1906	£110,000	23) 110,000	£1	£1	nil.	£3,448	31.12.08	8½% Interim for 1909	---	205/-

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE.	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E.	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par.
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡	Hongkong & Shanghai Banking Corporation.	$750,000	$500	§ all	Half yearly, June 30th and December 31st	par
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902	Hongkong & Shanghai Banking Corporation.	Tls. 543,900	Tls. 100	....	Half yearly, June 30th and December 31st	Tls. 103½
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903	Hongkong & Shanghai Banking Corporation.	Tls. 500,000	Tls. 100	....	Half yearly, January 1st and July 1st	102½
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par.
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	‖	Half yearly, March 31st and Sept. 30th	Tls. 97½.

Closing quotations: Plus interest

a Authorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repair Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 4,000 shares unissued.
2 First issue of 60,000, of which 10,411 unallotted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unallotted.
6 1,616 shares unallotted.
7 75,000 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 40,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 399 shares unissued.
15 22,277 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 5,000,000.
19 12,000 issued only.
20 Typhoon and Floods Insurance Fund
21 Special Cash Reserve.
22 1000 shares unissued.
23 10,000 shares unissued.
24 4595 part paid shares.
25 7,500 shares unissued.
26 10,000 shares unissued.
27 2,350 shares unissued.
28 25,000 shares unissued.
29 100,00 shares unissued.
*Based on last year's dividend.
** Based on present dividend.
§ 216 held by the Company.
‖ Only Tls. 134,000 taken up.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Comp., the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 95.
*** Redeemable at par on 30th June, 1915.
Dr. Deficit.
†† Singapore dollars.
‡‡ 4,880 shares unissued.
× 16,756 shares unissued.
§§ 25,000 shares unissued.
4140 shares unissued.

ADDITIONAL SHANGHAI SHARE QUOTATIONS

June 25, 1910

STOCK	CLOSING QUOTATIONS	HIGHEST AND LOWEST PRICES DURING THE WEEK	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	LAST DIVIDEND	WHEN PAID
Oriental Consolidated Mining Co., Ltd	35[10		G. $5,000,000	500,000	G. $10	G. $10	none	Total of Gold 1.15 for 1909	Jan. 10, 1910
Vulcan Iron Works, Limited	Tls. 40		Tls. 500,000	1,000	Tls. 500	Tls. 500	—	Tls. 50 for year ended 31.8.06	Nov. 1, 1906
Yangtsze Wharf & Godown Co., Limited	Tls. 207		Tls. 250,000	2,500	Tls. 100	Tls. 100	Tls. 50,000	Tls. 15 for 1909	April 1, 1910
Wei-hai-wei Land & Building Co., Limited	Tls. 9 nominal		Tls. 91,850	3,674	Tls. 25	Tls. 25	—	Interim of $2.00 for 1909	Aug. 3, 1909
Anglo-German Brewing Co., Limited	$85 buyers		$100,000	4,000	$100	$100	none	5% for 1909	Mar. 12, 1910
Butler Tile Works, Limited	Tls. 25		Tls. 60,000	1,200	Tls. 50	Tls. 50	—	Tls. 3 for year ending 31.3.09	June 8, 1909
Major Bros., Limited	Tls. 55		Tls. 300,000	6,000	Tls. 50	Tls. 50	—	——	—
Oriental Ice Company, Limited	Tls. 20		Tls. 130,000	2,600	Tls. 50	Tls. 50	—	First year	—
Scharffs Oil and Bone Mills, Ltd	Tls. 40		Tls. 200,000	4,000	Tls. 50	Tls. 50	—	First year	—
Shanghai Ice Company, Limited	Tls. 12		Tls. 200,000	8,000	Tls. 25		—	3% for 1907	Mar. 14, 1908
Campbell, Moore & Co., Limited	$10		$12,000	1,200	$10	$10	$9,000	$3 for 1905	Apr. 2, 1906
Dunning & Company, Limited	$35 sellers		$100,000	2,000	$50	$50	—	$5 year ending 28.2.08	Apr. 15, 1908
J. Llewellyn & Co., Limited	$60 nominal		$72,000	1,200	$60	$60	—	7.20 for 1909	May 1, 1910
Lane, Crawford & Company	$150		$250,000	2,500	$100	$100	—	Final of 3% making 6% for 1908	June 8, 1909
S. Moutrie & Company, Limited	$40		$250,000	5,000	$50	$50	—	$2 for year ended March 31, 1909	June 18, 1909
Weeks & Company, Limited	$23		$400,000	20,000	$20	$20	$40,000	Final of 6% making 10% for 1909	June 1, 1910
Dominion Rubber Co., Limited	Tls. 62½		Tls. 225,000	22,500	Tls. 10	Tls. 4	—	First year	—
Kalumpong Rubber Co., Ltd	Tls. 700		Tls. 700,000	14,000	Tls. 50	Tls. 50	** Tls. 11,844.48	16% for 1908	Nov. 9, 1909
Senawang Rubber Estates Company, Limited	Tls. 1550		Tls. 250,000	2,500	Tls. 100 Tls. 100	Tls. 100 Tls. 75	—	——	—
Tebong Rubber and Tapioca Estate, Limited	Tls. 48		£76,000	76,000	£1	£1	—	——	—
Shanghai Mercury, Limited	Tls. 50 buyers		Tls. 105,500	2,100	Tls. 50	Tls. 50	—	Final of 6% making 16% year 1909	June 22, 1910
Shanghai Mutual Telephone Co., Limited	Tls. 67½ buyers		Tls. 675,000	13,500	Tls. 50	Tls. 50	—	Tls. 3 for 1907	June 28, 1909
China Export, Import & Lumber Company, Limited	Tls. 75		Tls. 350,000	500	Tls. 100	Tls. 50	—	5 p. c. for 1909	May 1, 1910
China Printing Co., Limited	Tls.		Tls. 750,000	1,500	Tls. 50	Tls. 50	—	7% 1908	Apr. 18, 1909
Hirano Mineral Water Co., Ltd.	Y. 10		Y. 125,000	5,000	Y. 25	Y. 25	—	10%=yen 2½ for year ending 30th Sept. 08 Y. 1.20 for year ended Feb. 29	Apr 26, 1909
E. E. Porter & Co., Limited	$50		$100,000	2,000	$50	$50	—	$6 for 1907	Apr. 22, 1908
Shanghai Electric & Asbestos Company, Limited	$21 sellers		$125,000	5,000	$25	$25	—	8% for year ended Feb. 28, 09	June 21, 1909
Shanghai Electric Construction Company, Limited	£6 sellers	£11	£320,000	32,000	£10	£10	—	First year	—

DEBENTURES

LOANS		PRICE—PLUS ACCRUED INTEREST	AMOUNT OF LOAN	OUTSTANDING	NOMINAL VALUE	RATE OF INTEREST	WHEN PAYABLE
Shanghai Municipal Debentures	1892	Tls. 92½	Tls. 50,000	Tls. 45,400	Tls. 100	5 %	June & Dec.
do	1893	,, 96	,, 125,000	" 32,000	" 100	5½ ,,	Do
do	1894	,, 105	,, 105,000	" 60,000	" 100	6 ,,	Do
do	1895	,, 92½	,, 115,000	" 32,600	" 100	5 ,,	Do
do	1896	,, 92½	,, 140,000	" 181,800	" 100	5 ,,	Do
do	1897	,, 92½	,, 268,800	" 268,400	" 100	5 ,,	Do
do	1898	,, 105	,, 300,000	" 60,000	" 100	6 ,,	Do
do	1900	,, 96	,, 33,900	" 31,700	" 100	5½ ,,	Do
do	1901	,, 105	,, 250,000	" 200,000	" 100	6 ,,	Do
do	1902	,, 105	,, 150,000	" 150,000	" 100	6 ,,	Do
do	1903	,, 105	,, 490,500	" 490,500	" 100	6 ,,	Do
do	1904	,, 105	,, 214,500	" 214,500	" 100	6 ,,	Do
do	1905	,, 105	,, 320,000	" 320,000	" 100	6 ,,	Do
do	1907	,, 105	,, 250,000	" 250,000	" 100	6 ,,	Do
Chinese Imperial Government Loan	1886 E	,, 250	,, 767,200	" 354,400	" 250	7 ,,	Mar. & Sept
Shanghai Land Investment Co., Debentures	1890	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	May & Nov.
do	1892	,, 96	,, 250,000	" 250,000	" 100	5½ ,,	June & Dec.
do	1894	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	Mar. & Sept.
do	1896	,, 92½	,, 250,000	" 250,000	" 100	5 ,,	June & Dec.
do	1900	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	April & Oct.
do	1901	,, 104	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
do	1901	,, 96	,, 100,000	" 100,000	" 100	5 ,,	May & Nov.
do	1902	,, 103½	,, 400,000	" 400,000	" 100	6 ,,	June & Dec.
do	1905	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	Do
Shanghai Waterworks Co., Debentures	1909	,, 103	,, 815,900	" 815,900	" 100	6 ,,	Do
Perak Sugar Cultivation Co., Debentures	1902	,, 101	,, 200,000	" 200,000	" 100	7 ,,	April & Oct.
Shanghai Gas Co., Debentures	1909	,, 103	,, 800,000	" 800,000	" 100	5 ,,	Do
Shanghai and Hongkew Wharf Co., Debentures	1902	,, 102	,, 839,100	" 799,800	" 100	6 ,,	June & Dec.
Astor House Co., Debentures	1905	,, 103	,, 750,000	" 500,000	" 100	7 ,,	Do
British Municipal Council, Hankow	1901	Sh. ,, 105	H'kow Tls 100,000	H'kow Tls 100,000	" 100	7 ,,	June & Dec.
Shanghai Club Debentures	1907	,, 100	Tls. 170,000	Tls. 170,000	" 100	6 ,,	Do
Country Club Debentures		,, 97	,, 139,000	" 139,000	" 100	6 ,,	Do
do	1907	,, 97	,, 92,000	" 92,000	" 100	6 ,,	Do
Lane Crawford & Co., Debentures	1907	,, 102½	,, 110,000	" 110,000	" 100	7 ,,	Mar. & Sept.
Anglo-French Land Debentures	1908	,, 102	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
Central Stores Ltd. Debentures	1908	,, 102½	,, 250,000	" 250,000	" 100	8 ,,	Do
Shanghai Mutual Tel. Co. Debentures	1909	,, 102½	,, 350,000	" 200,000	" 100	6 ,,	Do

SINGAPORE SHARE QUOTATIONS

(COURTESY MESSRS. FRASER & CO., BROKERS, SINGAPORE, JUNE 22, 1910)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers.	Sellers.
								MINING		
1906	£30,000	30,000	30,000	1	1	....	....	Malaya and Siam Corporation Ltd.	7[6	10[-
1906	£250,000	179,500	500,000e	5/-	5/-	....	....	Pahang Consolidated Co., Ltd.	5[-	6[-
1903	$300,000	300,000	30,000	10	10	....	10% interim for 1909	Belat Tin Mining Co., Ltd.	4.00	5.00
1907	$300,000	225,000	22,500s	10	10	....	....	Bruang Ltd.	4.00	5.00
1901	$600,000	600,000	60,000	10	10	25,000	6% for year ending 30-4-09	Bruseh Hydraulic Tin Mining Co., Ltd.	5.00	6.00
1907	$400,000	375,000	37,500b	10	10	....	....	Kanaboi, Ltd.	2.25	2.40
1901	£60,000	60,000	60,000	1	1	....	2[- interim 1909	Kinta Tin Mines, Ltd.	14.00	14.75
1905	$150,000	99,000	9,900c	10	10	6,485.68	35% for year ending 31-12-07	Kuantan Tin Mining Co., Ltd.	3.00	3.25
1906	£120,000	120,000	120,000	1	1	....	1[- interim 1909.	Lahat Mines Ltd.	8.50	9.00
1906	$450,000	450,000	45,000	10	10	....	....	Malacca Tin Dredging Co., Ltd.	2.00	2.75
1907	£100,000	80,000	80,000a*	1	1	....	....	Pengkalen, Ltd	5.50	6.50
1904	£100,000	80,000	80,000	1	1	....	....	Pusing Bahru Tin Mines, Ltd	7.50	8.50
1904	£120,000	100,000	100,000d	1	1	6,000	45% for year ending 30-6-07	Pusing Lama Tin Mines, Ltd.	....	3.50
1907	$450,000	300,000	30,000y	10	10	....	....	Rahman Hydraulic Tin, Ltd.	9.00	9.50
1905	£27,000	27,000	27,000	1	1	....	1[- for 1907	Rambutan, Ltd.	12.50	13.50
1892	£200,000	200,000	200,000	1	1	4,873	1[2 paid April, 1910	Raub Aust. Gold Ming. Co., Ltd,	5.00	5.25
1905	£40,000	40,000	40,000	1	1	....	....	Redhills Tin Mining Co., Ltd.	3.00	3.50
1900	$110,000	110,000	22,000	5	5	....	3% for year ending 22-1-09	Royal Johore Tin Mining Co., Ltd	1.35	1.50
1907	$550,000	500,000	50,000f*	10	10	....	....	Salak South, Ltd.	1.75	3.00
1907	£80,000	80,000	80,000	1	1	....	....	Sempam Tin Mines, Ltd	2.00	2.50
1906	$850,000	850,000	85,000	10	10	25,000	5% interim 1909	Serendah Hydraulic Tin Ming. Co., Ltd	6.00	7.00
1899	$230,000	230,000	23,000	10	10	....	3% for ½ year ending 31-12-08	Sipiau Tin Co., Ltd	1.50	2.00
1909	$200,000	$150,000	15,000	10	10	....	....	Sungei Gau Tin Mining Co., Ltd	4.00	5.00
1907	£90,000	70,000	70,000t	1	1	....	1[6 interim 1909	Tekka, Limited	22.00	24.00
1906	£150,000	150,000	150,000	1	1	....	1[- interim 1909	Tongkah Harbour Tin Dredging Co., Ltd.	10.00	11.00
1902	£160,000	160,000	160,000	1	1	....	3[- interim 1909	Tronoh Mines, Ltd	12.00	13.00

SINGAPORE SHARE QUOTATIONS.—(Continued.)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers
								STERLING RUBBER		
1909	£85,000	75,000	750,000x*	2/-	2/-	—		Allagar Rubber Estates, Ltd	6/3	7/3
1905	£150,000	150,000	1,500,000	2/-	2/-	—	80% for year ending 31-12-09	Anglo-Malay Rub. Co., Ltd.	1.8.6	1.10.0
1909	£50,000	35,250	470,000g‡	2/-	1/6	—		Batang Malaka Rubber Estates, Ltd	2/-	3/- p.
1904	£30,000	20,187 10/-	19,000	1	1	—	50% for year ending 31-12-1909	Batu Caves Rub. Co., Ltd	17.0.0	18.0.0
			4,750f	1	5/-	—				
1906	£80,000	70,000	70,000l*	1	1	—	2½% interim 1909	Batu Tiga (Selangor) Rubber Co., Ltd.	5.2.6	5.10.0
1909	£100,000	68,908	57,816	1	1	—		Bukit Kajang Rubber Estates, Ltd	3.5.0	3.15.0
			22,184n*	1	10/-	—		" " " *part paid*	2.7.6	2.10.0p.
1907	£30,000	25,500	24,000e*	1	1	—		Bukit Lintang Rubber Estates, Ltd	5.5.0	5.15.0
			6,000	1	5	—		" " " *part paid*	2.5.0	2.10.0p.
1903	£70,000	66,700	66,700g	1	1	2,000	60% interim 1909	Bukit Rajah Rubber Co., Ltd.	20.0.0	22.0.0
1906	£35,000	30,000	30,000s*	1	1	—		Castlefield (K.) R. Estate, Ltd.	5.15.0	6.5.0.
1909	£225,000	175,000	1750,000t*	2/-	2/-	—		Chersonese (F.M.S.) Estates, Ltd	4/9	5/6
1904	£16,000	16,000	100,000	2/-	2/-	—	25% interim 1909	Cicely Rubber Estates Co., Ltd	2.10.0	2.12.6
			60,000	2/-	2/-	—	26¼% interim 1909	" " " " *5% Pref*	2.10.0	2.12.6
1905	£75,000	62,007	620,070i	2/-	2/-	1,000	80% for 1909	Consolidated Malay Rub. Estates, Ltd	1.11.6	1.13.6
1906	£110,000	102,500	102,500k*	1	1	—	50% for year ending 31-12-09	Damansara (Selangor) Rubber Co., Ltd.	8.12.6	9.2.6
1903	£600,000	444,200	444,200a	1	1	—		Duff Development Co., Ltd.	1.5.0	1.7.6
1909	£45,000	40,000	40,000p*	1	1	—		Edinburgh Rub. Estates, (Selangor) Ld.	6.0.0	7.0.0
1907	£80,000	70,000	70,000n	1	1	—		Golconda Rubber Co., Ltd.	6.17.6	7.2.6
1906	£310,000	305,000	305,000j	1	1	8,784	15% interim 1909	Highlands & Lowds. Para Rub. Co., Ltd.	6.12.6	6.17.6
1904	£50,000	30,000	30,000q*	1	1	2,500	25% interim	Inch Kenneth Rubber Estates, Ltd	17.12.6	18.5.0
1909	£200,000	182,500	950,000p	2/-	1/-	—		Kam. (P.) R. & T. Co., Ltd. "A" Shares	8/6	9/- p.
			105,000	1	1	—		" " " "B" "	----	nom.
1905	£65,000	65,000	65,000	1	1	—	10% for year ending 31-12-09	Kapar Para Rubber Estates, Co., Ltd	9.10.0	10.0.0
1909	£35,000	£18,750	90,000	2/-	2/-	—		Kota Tinggi Johore Rubber Co., Ltd	4/-	5/-
			160,000	2/-	1/-	....		" " " "	2/-	2/6 p.
1906	£180,000	180,000	180,000	1	1	—	30% interim	Kuala Lumpur Rubber Co., Ltd	8.10.0	9.10.0
1907	£100,000	90,000	900,000h*	2/-	2/	—	25% for year ending 31-12-09	Labu (F. M. S.) Rub. Co., Ltd. *part paid*	17/6	19/6
1907	£320,000	269,780	198,930v	1	1	3,000	10% interim 1909	Lanadron Rubber Estates, Ltd.	6.15.6	7.5.0
			70,850	1	15/-	—	10% interim 1909	" " " *part paid*	5.5.0	5.15.0p.
1908	£125,000	75,000	60,000g*	1	1	—		Ledbury Rubber Estates Ltd.	5.0.0	5.5.0
			40,000	1	7/6	—		" " " *part paid*	3.5.0	3.10.0p.
1895	£100,000	98,324 8/-	883,244w	2/-	2/-	4,000	165% for year ending 31-12-09	Linggi Plantations Ltd.,	3.1.0	3.3.0
			10,000	1	1	—	7% for year ending 31-12-08	" " *7% Pref*	----	nom.
1907	£140,000	118,000	118,000k	1	1	—	3% for year ending 31-12-08	London Asiatic R. & Produce Co., Ltd.	7.5.0	7.15.0
1909	£220,000	125,000	50,000	1	1	....		Lumut Rubber Estates, Ltd.	3.0.0	3.10.0
			150,000	1	10/-	—		" " " " *part paid*	32/6	40/- p.
1906	£400,000	300,000	185,000	1	1	—	10% interim for 1909	Malacca Rubber Plants., Ltd.	13.10.0	14.0.0
			115,000	1	1	....	" " "	" " " " *7½% Pref.*	13.10.0	14.0.0
1909	£210,000	175,000	1,750,000	2/-	2/-	—		Merlimau Rubber Estates, Ltd	7/-	8/-
1903	£30,000	22,500	225,000l	2/-	2/-	—	125% for year ending 31-12-09	Pataling Rubber Estates Synd. Ltd	3.6.0	3.10.0
1906	£85,000	85,000	85,000	1	1	—	12½% interim for 1909	Perak Rubber Plantations, Ltd	5.15.0	6.5.0
1909	£60,000	36,875	15,000z*	1	1	—		Rembia Rubber Estates Ltd.	1.15.0	2.0.0
			35,000	1	12/6	—		" " " *6% Cum. Pref*	13/6	17/6 p.
1904	£20,000	18,752	20,000u	1	1	....		Sagga Rubber Company, Limited	16.0.0	17.0.0
1905	£100,000	100,000	71,378 28,622l‡	1	1	....		Sapong Rubber and Tobacco Estates, Ltd.	1.12.6	1.15.0
1907	£100,000	100,000	100,000	1	1	—	15% for year ending 31-12-09	Seafield Rubber Co., Ltd	7.12.6	8.5.0
1898	£30,000	30,000	300,000	2/-	2/-	3,000	287½% for year ending 31-12-09	Selangor Rubber Co., Ltd	3.10.0	3.12.6
1909	£50,000	32,000	40,000e‡	1	16/-	—		Sendayan (F. M. S.) Rubber Co., Ltd	2.0.0	2.7.6 p.
1906	£65,000	65,000	65,000	1	1	—	7½% for year ending 31-12-09	Shelford Rubber Estate, Ltd	3.15.0	4.5.0
1909	£150,000	100,000	100,000i‡	1	15/-	—		Sialang Rubber Estates, Ltd	1.12.6	1.15.0p.
1909	£120,000	100,000	100,000s*	1	1	—		Singapore Para Rubber Estates, Ltd.	3.15.0	4.0.0
1906	£192,500	192,500	1,925,000	2/-	2/-	—	7½% interim 1909	Straits Settlements (B.) Rub. Co., Ltd	8/-	9/-
1907	£45,000	40,500	12,600	1	1	—		Sungei Choh Rub. Estate, Co. Ltd. *Fully pd.*	5.5.0	6.0.0
			32,400	1	17/6	....		" " " " *part paid*	4.5.0	4.10.0p.
1906	£110,000	100,000	100,000c*	1	1	....	37½% for year ending 31-12-09	Sungei Kapar Rubber Co., Ltd	9.7.6	10.0.0
1907	£70,000	55,000	55,000	1	1	....		Sungei Salak Rubber Co., Ltd	4.12.6	5.0.0
1904	£50,000	50,000	50,000	1	1	—		Sungei Way (Selangor) Rub. Co., Ltd	6.0.0	6.10.0
1908	£150,000	60,000	36,000	1	1	—		Tebrau (Johore) Rubber Co	5.0.0	5.5.0
			64,000	1	7/6	—		" " " *part paid*	3.2.6	4.0.0 p.
1907	£200,000	170,000	170,000j*	1	1	—	5% interim 1910	United Serdang (S.) R. Plantations, Ltd.	7 0.0	8.0.0
1908	£85,000	65,000	650,000	2/-	2/-	—	10% for year ending 30-6-09	United Sumatra Rubber Estates, Ltd.	11/6	12/6
1904	£60,000	50,600	506,000m	2/-	2/-	....	25% interim for 1909	Vallambrosa Rubber Co., Ltd.	2.9.0	2.13.0
								DOLLAR		
1909	$120,000	105,000	105,000w*	1	1	....		Alor Gajah Rubber Estate, Ltd	3.50	4.00
1909	$750,000	600,000	140,000b‡	5	5	....		Ayer Panas Rubber Estates, Ltd	11.00	11.25
1905	$200,000	151,200	151,200 x	1	1	5,250	100% for year ending 31-3-1910	Balgownie Rub. Estate, Ltd	19.00	20.00
1910	$500,000	500,000	50,000	10	10	—		Bukit Timah Rubber Estates, Ltd	19.00	21.00
1910	$750,000	700,000	70,000h‡	10	10	—		Changkat Serdang Estates. Ltd	16.00	17.00
1909	200,000	62,500	12,500	10	5	—		Cheras Rubber Estates, Ltd	9.00	---- p.
1909	$550,000	475,000	475,000v*	1	1	....		Elphinstone Estates, Ltd	3.50	4.00
1909	$300,000	300,000	300,000	1	1	—		Glenealy Plantations, Ltd	3.00	3.25
1910	$200,000	164,285	12,857m‡	5	5	—		Haytor Rubber States, Ltd	----	nom.
			20,000	5	4	—		" " " " *part paid*	7.00	8.00 p.
1910	$600,000	150,000	30,000c‡	10	5	....		Henrietta Estates, Ltd.	3.00	5.00 p.
1906	$680,000	680,000	40,000	17	17	—		Hevea Rubber Planting Co. Ltd.	19.00	21.00
1909	$250,000	200,000	20,000a‡	10	10	—		Indragiri (S.) R. and Gutta P. Co., Ltd.	28.00	30.00
1910	350,000	291,000	55,000	5	5	....		Kelemak Rubber Estate, Ltd.	5.00	5.25
			59,000	5	4	....		" " " *part paid*	0.10	0.25 p.
1907	$300,000	200,000	20,000d‡	10	7	—		Kombok Rubber Co., Ltd	20.00	25.00p.
1909	$400,000	400,000	80,000	5	5	—		Pajam Limited	17.00	18.00
1909	$200,000	200,000	200,000	1	1	—		Pantai, Limited	2.00	2.50
1909	$500,000	450,000	45,000m*	10	10	—		Pegoh, Limited	45.00	46.00
1910	$450,000	295,000	45,000f‡	5	5	—		Port Dickson Rubber Co., Ltd	15.00	16.00
			35,000	5	2	—		" " "	6.00	7.00 p.
1904	$100,000	100,000	50,000b*	2	2	20,000	150% for year ending 31-1-10	Sandycroft Rubber Co., Ltd	37.00	38.00
1905	$500,000	500,000	5,000	100	100	—		Singapore Rubber Co., Ltd	400.00	450.00
1903	$425,000	328,800	121,150	2	2	—	20% for year ending 31-12-09	Singapore & Johore Rub. Co., Ltd	16.50	17.00
			87,500	2	1	—	" " " "	" " " *part paid*	15.00	16.00 p.
1909	$250,000	100,000	10,000o*	10	10	....		St. Helena Rubber Coy., Ltd	40.00	45.00
1909	$200,000	165,000	33,000p*	5	5	....		Teluk Anson Rubber Estate, Ltd	8.00	9.00
1909	$1,000,000	637,500	737,500y*	1	1	....		United Singapore Rubber Estates, Ltd.	2.80	3.00
				1	-/50	....		" " " " "	----	nom.
								GENERAL		
1903	£400,000	400,000	400,000	1	1	—		Singapore Electric Tramways, Co., Ltd.	4/3	4/6
1907	$1,500,000	1,065,150	25,000d*	10	10	—	10% for year ending 31/12/08	Eastern Smelting Co. Ltd	----	10.00 n.
			116,450	10	7	—	10% for year ending 31-12-08	" " " *part paid*	----	7.00
1898	$225,000	225,000	4,500	50	50	170,000	15% & 5% bon. for yr. end. 31-12-09	Fraser & Neave, Ltd.	200.00	205.00
1905	$2,400,000	2,400,000	18,000	100	----	75,000	2½% for year ending 31-10-08	Howarth Erskine, Ltd	60.00	61.00
			6,000	100	----	—	7% for year ending 31-10-08	" " *7% Pref*	90.00	92.50
1896	$1,000,000	1,000,000	6,000	100	100	40,600	12% for year ending 31-12-09	Katz Brothers, Ltd. *Deferred*	----	125.00
			4,000	100	100	—	8% " " " "09	" " *8% Cum. Pref*	----	nom.
1901	$34,000	34,000	3,400	10	10	—	20% for year ending 31-10-09	Maynard & Co., Ltd.	22.00	22.50
1899	$875,000	875,000	6,000	100	100	175,000	5% for year ending 31/12/09	Riley, Hargreaves & Co., Ltd	77.50	82.50
			2,750	100	100	—	7% for year ending 31/12/09	" " " " *7% Pref*	100.00	----
1903	$600,000	250,000	25,000n	10	10	—	10% for year ending 30-6-09	Singapore Cold Storage Co., Ltd	15.00	16.00
1891	$30,000	30,000	600	50	50	23,000	10% for year ending 31-7-09	Singapore Dispensary Ltd.	52.50	54.00
1884	$200,000	200,000	[2,000z	100	100	75,000	15% for year ending 31-12-09	Straits Ice Co., Ltd	155.00	165.00
1890	$500,000	498,000	4,980	100	100	760,000q	10% for year en 1 31-12-09	Straits Steam Ship Co., Lt	220.00	240.00
1887	$3,000,000	3,000,000	300,000	10	10	130,000r 1,222,409	10% & 5% bon. for half yr. end. 30/9/09	Straits Trading Co., Ltd.	59.00	60.00

a { 152,800 unissued; 43,949 6% debenture
b 2,500 unissued
c 5,100 "
d 20,000 "
e { 54,500 £1 Prefs. issued; 45,500 £1 " unissued; 100,000 5/- Ord. "
f 6,250 unissued
g 3,300 "
h 12,930 "
i 5,000 "
j £40,000 6% Debentures 22,000 unissued
k 75.000 unissued
l 94.000 "
m 35.000 "
n 20.000 unissued
o 175,000 unissued "A" shares
p Sundry Reserves.
q "
r 7,500 unissued
s 20,000 "
t 2,268 9/- paid shares
u 50,220 unissued
v 16,756 "
w 4.880 "
x 15,000 "
y 20 unissued
z 20,000 "
a* 221 7½% Debentures
b* 10,000 unissued
c* 8,550 "
d* 5.000 unissued
e* 25,000 "
f* 10,000 "
g* 30,000 "
h* 7,500 "
i* £10,000 Convertible 6% Debentures issued £10,000 do. unissued
j* 5,000 unissued
k* 20,000 "
l* 15,000 "
m* 7,000 "
n* 20,000 "
o* 5,000 "
p* 500,000 "
q* 15,000 "
r* 75,000 "
s* 15,000 unissued
t* 100,000 "
u* 262,500 "
v* 10,000 "
w‡ 5,000 "
x‡ 30,000 "
y‡ 30,000 "
z‡ 10,000 "
a‡ 10,000 "
b‡ 10,000 "
c‡ 30,000 "
d‡ 5,000 "
e‡ 50,000 "
f‡ 70,000 "
g‡ 35,000 "
h‡ 6% Deb. Stock Convertible.
i‡ 7,143 unissued.

DEBENTURES

Name	Amount	Buyers	Sellers
Howarth Erskine, Ltd. 6%	$ 600,000	----	par.
Riley, Hargreaves & Co., Ltd. 6%	284,000	1%	3% p.
Singapore Electric Tramways, Co., Ltd. 5%	£350,000	----	----
Singapore Municipal 5%	1,878,000	----	nom.
" " 4½% of 1907	1,600,000	6%	7% p.
" " 4½% of 1909	1,000,000	7%	8% p.
" 4%	602,900	----	7% d

YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, JUNE 2ND, 1910.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND.	AT WORKING ACCOUNT OR CARRIED FORWARD.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
Brett & Co., Ltd.	-Y- 28,000	2,800	-Y- 10	-Y- 10			31-12-09	12½%	for 1 year	15 Sellers
Club Hotel, Ltd.	185,000	1,850	100	100	3,000	-Y- 768.96	31-3-10	6%	for 1 year	70 Nominal
Grand Hotel, Ltd.	500,000	5,000	100	100	10,000		31-12-09	2½%	for ½ year	100 Nominal.
Helm Bros., Ltd.	186,000	3,720	50	50	25,000	-Y- 6,395.55	31-12-09	17½%	for 1 year	80 Sales
Langfeldt & Co., Ltd.	100,000	2,000	50	50	12,500	3,653.92	31-12-09	10%	for 1 year	60 Sellers.
C. Nickel & Co., Ltd. †	500,000	20,000	25	25		36,332.37	31-10-09	20%	for 1 year	50 Sales.
Thwaites, Limited	100,000	2,000	50	50			First Year	—	—	
Yokohama Engine and Iron Works *	500,000	10,000	50	50	50,000	-Y- 29,421.19	31-5-09	—	for 1 year	50 Nominal
Oriental Hotel, Ltd., Ordinary	250,000	3,000	50	50	306,090.49		31-8-07	12%	for 1 year	50 Sales.
Oriental Hotel, Ltd., Preference		2,000	50	50				8%	for 1 year	52:50 Sales
The Union Estate and Investment Co., Ltd. ‡	1,000,000	10,000	100	100	6,000.00	1,753.03	30-9-09	6½%	for 1 year	100 Nominal.

† 285,000 unissued.
‡ 475,000 unissued.

*-Y- 390,000 issued.
110,000 unissued.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Brett & Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	95 Sales.
Yokohama United Club	250,000.00	100.00	7%	30 June and 31 Dec.	100 Sales.
Oriental Hotel, Limited	350,000.00	100.00	8%	1 April and 1 Oct.	103.50 Sales.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	95 Sellers.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	LAST DIVIDEND.	DIVIDEND PAYABLE.	CLOSING QUOTATION.
Bonds & Debentures.					
Exchequer Bonds 2nd issue	-Y-100	-Y-100	5%	March and Sept.	-Y-100.80
Exchequer Bonds 3rd issue	100	100	5%	March and Sept.	,, 100.80
Consolidated Bonds (Seiri)	100	100	5%	June and Dec.	,, 99.60
War Bonds (Gunji)	100	100	5%	June and Dec.	,, 99.60
Imperial 5% Bonds	100	100	5%	March and Sept.	,, 100.60
Special 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 100.00
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 102.50
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 104.50
Osaka City Harbour Construction Bonds	100	100	6%	June and Dec.	,, 102.50
Osaka City Public Loan Bonds	100	100	6%	June and Dec.	,, 102.50
Kawasaki Dock Yards Co.'s Debentures	100	100	7%	June and Dec.	,, 102.00
Tokyo Race Associations "	500	500	30%	June and Dec.	,, 175.00
Railways & Electric Trams.					
Tokyo Railway Company, Limited	50	50	5 2/5%	June and Dec.	,, 72.70
Yokohama Electric Tramway Company, Limited	50	50	6%	July and Jan.	,, 53.00
Keihin Electric Tramway Company, Limited	50	50	6%	June and Dec.	,, 56.50
Southern Manchurian Railway Co., Ltd.	100	20	6%	June and Dec.	,, 47.00
Hanshin Electric Tramway Co., Ltd.	50	50	12%	May and Nov.	,, 118.50
Cotton Spinnings.					
Kanegafuchi Cotton Spinning Company, Limited	50	50	14%	July and Jan.	,, 111.50
Fuji Gassed-yarn Company, Limited	50	50	14%	July and Jan.	,, 101.10
Tokyo Cotton Spinning Company, Limited	50	50	8%	July and Jan.	,, 46.00
Imperial Hemp Weaving Company, Limited	50	50	12%	July and Jan.	,, 70.00
Nisshin Boseki Kabushiki Kaisha	50	17½	7%	—	,, 15.20
Sugar & Beer Cos.					
Dai-nippon Sugar Refinery Company, Limited	50	50	....	May and Nov.	,, 22.00
Ensuiko Sugar Refinery Company, Limited	50	20	20%	June and Dec.	,, 54.95
Dai-nippon Beer Company, Limited	50	50	12%	July and Jan.	,, 82.50
Kirin Brewery Company, Limited	50	50	7%	July and Jan.	,, 53.50
Docks & Steamships.					
Yokohama Dock Company, Limited	50	33	12%	June and Dec.	,, 63.50
Uraga Dock Company, Limited	50	50	....	July and Jan.	,, 8.00
Kawasaki Dockyard Company, Limited	50	50	12½%	Feb. and Aug.	,, 55.00
Nippon Yusen Kaisha	50	50	10%	May and Nov.	,, 96.40
Hokkaido Tanko S. S. Company, Limited	50	50	5%	July and Jan.	,, 27.50
Miscellaneous.					
Tokyo Electric Light Company, Limited	50	50	12%	June and Dec.	,, 112.00
Tokyo Gas Company, Limited	50	50	13%	July and Jan.	, 122.50
Yokohama Union Electric Light Company, Limited	50	50	14%	June and Dec.	,, 112.00
Fuji Paper Mills	50	50	6%	June and Dec.	,, 32.60
Otaru Timber Company, Limited	50	50	....	March and Sept.	,, 8.00
Hoden Petroleum Company, Limited	50	50	20%	April and Oct.	,, 74.00
Tokyo Rope Manufacturing Company, Limited	50	50	18%	June and Dec.	,, 112.00
Japan Horse Improvement Company, Limited	50	50	....	March and Sept.	,, 14.00
Tokyo Stock Exchange Company	50	50	15 1/5%	June and Dec.	,, 234.50
Osaka Electric Light Company, Limited	50	50	16%	July and Jan.	,, 137.00
Kobe Electric Light Company, Limited	50	50	14%	July and Jan.	,, 100.00

BANGKOK SHARE QUOTATIONS

(COURTESY MESSRS. EDWARDS & CO., BANGKOK, SIAM.)

NAME.	BUYERS.	SELLERS.	LAST SALES.	ESTABLISHED.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND	LAST DIVIDEND
Siam Electricity Co., Ltd.	Tcs. 375	Tcs. 380	Tcs. 380	1901	£ 300,000	30,000	£ 10—	£ 300,000	Tcs. 491,338	12% Tcs. 4 bon.
Paknam Railway Co., Ltd.	,, 200	,, —	,, 220	1893	Tcs. 400,000	5,000	Tcs. 80	Tcs. 400,000	,, 37,566	8%
Siam Tramway Co., Ltd.	,, —	,, —	,, 108	1905	,, 1,450,000	6250 Shares 7250 Deb. 1000 P. Shares	,, 100	,, 2,230,000	,, 1,875	—
Meklong Railway Co., Ltd.	,, —	,, 106	,, 105	1907	,, 2,230,000	22,300	,, 100	,, 223,000	,, 28,000	5%
Bangkok Manufact. Co., Ltd.	,, —	,, —	,, 132	1898	,, 400,000	4,000	,, 100	,, 400,000	,, 60,000	7% per for 6 months
Bangkok Dock Co., Ltd.	,, —	,, 135	,, 185	1865	,, 1,000,000	10,000	,, 100	,, 950,000	,, 220,000	
Siam Steam Packet Co.	,, —	,, 57	Par	1898	,, 190,000	3,800	,, 50	,, 190,000	,, 34,000	5%
Siam Commercial Bank	,, 1,050	,, —	Par	1906	,, 3,000,000	3,000	,, 1,000	,, 3,000,000	,, 338,850	8%
Menam Motor Boat Co.	,, —	,, 100	,, 100	1905	,, 200,000	2,000	,, 100	,, 200,000	—	6%
Transport Co., Motor	,, —	,, 90	,, 100	1906	,, 200,000	2,000	,, 100	,, 200,000	—	—
Jenderata Rubber Co.*	,, —	,, £8.—	,, 90 (for six calls)	1906	£ 40,000	4,000	£ 10	£ 7.-paid	—	—
Bagan Rubber Co.	,, —	,, —	,, —	1907	Tcs. 300,000	3,000	Tcs. 100	Tcs. 40 per share	—	—
Siam Steam Navigation Co., Ltd.	,, —	,, —	,, —	1909	,, 2,000,000	10,000	,, 200	—	,, 10,000	—
Siam Stone Works, Ltd.	,, —	,, 90	100	1909	,, 350,000	3,500	,, 100	,, 350,000	—	6% half year
Kombok Rubber Co.	,, —	,, —	19	1906	$ 300,000	30,000	$ 100	$7, per Share	—	—

PHILIPPINE SHARE REPORT

June 10, 1910

Name	When Incorporated	Authorized Capital	Issue Value of Share	No. of Shares	Subscribed	Paid up	Reserve	Working %	Date	Last Dividend	Closing Quotations
American Drug Store	1908	₱ 100,000	₱1,000	100	40	₱1,000	......	₱ 5,000	Jan. 4, 1909..	....	No sellers.
*Banco Español Filipino	1851	3,000,000	200	15,000	8,439	200	₱225,000	....	....	7% for year 1909....	200 buyers
Benguet Consolidated Mining Co.	1903	2,000,000	2	1,000,000	495,000	2	......	38,000	Feb. 2, 1909..	....	₱1.00.
Benguet Commercial Co., Ltd.	1908	200,000	10	20,000	7,360	10	......	.. ..	....	7% for year 1907....	₱10.
Bua Mining Co.	1905	300,000	100	3,000	2,620	100	......	12,900	Dec. 5 1909.	....	₱100.
Cadwallader-Gibson Lumber Co.	1908	1,000,000	100	10,000	8,650	100	......	....	....	....	No sellers.
*Camote-Clayton Mining Co.	1909	400,000	10	40,000	20,000	10	......	....	....	....	₱10.
*Compania Maritima	......	1,018,000	200	5,090	5,090	200	......	....	....	....	₱50 sales
*El Varadero de Manila	......	350,000	100	3,500	3,500	100	......	....	....	....	Sellers 70
Electrical Supply Co., Inc.	1909	100,000	100	11,000	500	72	......	....	....	....	No sellers
Export & Import Lumber Co.	......	200,000	200	1,000	1,000	200	......	....	....	....	No sellers.
*Fabrica de Hielo de Manila	1894	350,000	50	7,000	7,000	50	......	....	....	18% for year 1908...	₱75 sales.
*Germinal Cigar Factory	1900	500,000	500	1,000	1,000	500	₱143,499	639.41	Dec. 31, 1909	15% for year 1909 and 6% on capital......	500 sellers.
H. E. Heacock Co.	1909	100,000	100	1,000	800	100	......	....	....	First year...........	No sellers.
*Headquarters Mining Co. (Inc.)	1908	600,000	10	60,000	35,000	10	......	....	....	....	₱10 buyers.
Insular Lumber Co.	1907	2,000,000	200	10,000	9,000	200	......	....	....	....	No sellers.
Juan Seiboth Co., Ltd.	1908	150,000	20	7,500	500	20	......	....	....	First year...........	....
*La Concha Button Factory	1905	75,000	100	750	750	100	......	....	....	15% for year 1909...	₱110 sellers.
Lambert, Springer Co.	1908	200,000	1,000	200	80	1,000	......	....	....	....	No sellers.
Luzon Stevedoring Co.	1909	250,000	25	10,000	4,200	25	......	....	Sept 15, 1909	15%................	₱30.
Mindanao Herald Publishing Co.	1907	15,000	100	150	75	100	......	....	Dec. 31, 1908.	½ of 1% interim for 1908	No sellers.
Newspaper Publishing Co.	1907	400,000	100	4,000	3,740	100	......	....	....	....	....
Minas Carbon de Batan	1902	1,000,000	200	5,000	1,523	200	......	136,812	....	....	200
Walter E. Olsen Co., Inc.	1909	500,000	100	5,000	2,033	100	......	....	....	First year...........	No sellers.
Paracale Gold Dredging Co.	1907	£10,000	£1	10,000	9,000	£1	......	....	....	....	No sellers.
Palomar Park Amusement Co.	1908	300,000	......	300,000	60,312	.50	......	....	....	....	₱1.
Phil. Hemp Machine Co., Ltd.	1907	1,000,000	100	10,000	8,500	100	......	....	....	....	₱100
Philippine Publishing Co.	1907	600,000	200	3,000	2,181	200	......	....	Mar. 1st, 1909	₱3 a share for 1908..	₱50
Port Banga Lumber Co.	1908	100,000	100	1,000	934	100	None.	40,000	First Saturday in January..	None...............	No sellers.
The Philippine Gold Dredging Co.	1907	200,000	10	20,000	20,000	10	......	....	....	....	No sellers.
*Philippine Co., Ltd.	......	750,000	10	7,500	7,500	10	......	....	....	....	₱5 buyers.
Philippine Rosin & Turpentine Co.	.....	150,000	1	150,000	70,000	1	......	....	....	First year...........	....
Philippine Exploration Co.	1908	2,000,000	10	200,000	90,000	10	......	....	....	....	₱15 buyers
The Rosenstock Pub. Co.	1908	75,000	10	7,500	6,000	10	......	....	....	....	No sellers.
*San Nicolas Iron Works	......	300,000	500	600	600	500	......	....	....	....	₱200 sellers.
San Mauricio Gold Mining Co.	1908	4,000,000	200	20,000	....	....	......		....	First year...........	₱200.
Tarlac Railway Co.	1906	150,000	100	1,500	1,500	100	......	₱23,329	June 30, 1908.	....	No sellers.
Union Hemp Machine Co.	1909	50,000	10	5,000	2,600	10	......	....	....	....	No sellers
Zamboanga Cold Storage Co.	1903	40,000	100	400	200	100	₱8,500	....	May 1st, 1909.	20%................	₱120.

* John T. Macleod's share list

PHILIPPINE BONDS

	Dated	Authorized	Issued	Outstanding	Par Value	Rate of Int.	When payable	Last Quotation
Philippine Friar Land Bonds	Feb. 1st, 1904	$7,000,000	$7,000,000	$7,000,000	$ 100	4%	Feb. 1, 1914	104[illegible]
Public Works and Permanent Improvement Bonds	March 1, 1905	$5,000,000	$2,500,000	$2,500,000	$ 100	4%	March 1, 1915	104[illegible]
Do.	Feb. 1, 1906		$1,000,000	$1,000,000	$ 100	4%	Feb. 1, 1916	104[illegible]
Manila Sewer and Water Works Improvement Bonds	June 1, 1905	$4,000,000	$1,000,000	$1,000,000	$ 100	4%	June 1, 1915	104[illegible]
Do.	Jan. 2, 1907		$2,000,000	$2,000,000	$ 100	4%	Jan. 2, 1917	104[illegible]
Philippine Railway First Mortgage Four per cent Thirty Year Sinking Fund Gold Bonds	July 1, 1907	$15,000,000	$5,736,000	$5,736,000	$1000	4%	July 1, 1937	97

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Atlantic, Gulf & Pacific Co. 27

Baldwin Locomotive Works 32
Banco Español Filipino .... Cover
Bell, David W 18
Bohler Bros & Co. 55
Brighten, Malcolm & Co., Ltd. 55
British American Tobacco Co., Ltd. 35

Cadwallader-Gibson Lumber Co. 28
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Cia. General de Tabacos Filipinas. 36
Cia. Trasatlantica 35
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Cook's Sons, Adam 6

Defiance Machine Works 20
Derham Bros 23
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Dickeson, Jones & Co. 41
Dollar, Robert & Co. 55

Earnshaw, M. & Co., Inc 7
East Asiatic Dredging Co. 27
Eastern Engineering Co 49
Export and Import Lumber Co. 23

Fearon, Daniel & Co. 13-30
Fairbanks Morse & Co. 57

Fetro Machine & Foundry Co. 29
Fox Typewriter 33
Fushun Coal 3

Gardner Governor Co. 32
Gas Engine & Power Co. and Charles L. Seabury & Co. Consolidated 28
General Electric Co. 20
Germann & Co., Ltd 57
Germinal Cigar Factory 35
Gordon & Co 45
Grand Rapids Gas Engine & Yacht Co. 29
Gray Motor Co 29
Green Island Cement Co., Ltd. 38
Greilsammer Bros 24

Harvey, Stuart S. 43
Hongkong Rope Mfg. Co., Ltd 31
Hongkong & Shanghai Banking Corp .... Cover
Hongkong & Whampoa Dock Co., Ltd 10
Honolulu Iron Works Co. 58
Hupeh Cement Co 40

Imperial Hotel, Ltd. 52
International Correspondence Schools 13
Insular Lumber Co. 24
International Cold Stores, Ltd 41
International Banking Corp. .... Cover

Jardine, Matheson & Co. 25

Kawasaki Dockyard Co. Ltd 7
Kiangnan Dock & Engineering Works 8

La Parisien Carriage Factory 34
Lambert-Springer Co. 60
Lodge & Shipley Machine Tool Co. 27

Malthoid 60
Melchers & Co 52
McGregor, Samuel & Co. 55
Mitsu Bishi Dockyard & Eng Works 6
Mitsui Bussan Kaisha 5-48
Morse & Son, A. J 36

New Metropole Hotel 50
New Engineering and Shipbuilding Works, Ltd 11
Nicholson, C. S 6
Nippon Yusen Kaisha 58
North British Locomotive Co. Ltd. 47

Olsen & Co., Walter E .... Cover

Pacific Mail S. S. Co 37
Pacific Tank and Pipe Co. 60
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Penberthy Injector Co 32
Philippine Islands 2
Pickett Harness Co 34
Port Banga Lumber Co. 24

Racine, Ackermann & Co 39
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Rose, Downs & Thompson, Ltd 44
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Shanghai Machine Co. 26
Shanghai Waterworks Co. Ltd. 50

Shewan, Tomes & Co. 46
Siemens Schuckert 17
Siemssen & Co 22
Southern Pacific Co 37
South Manchuria Railway Mining Dept. 3
South Manchuria Railway 14
Stevenson & Co., Ltd., W. F. 10
Strong, Frank L. 43
Superior Wrench Co. 49
Swift & Co 32

Taikoo Dockyard and Engineering Company of Hongkong, Ltd. 9
Thompson F. H 49
Toyo Kisen Kaisha 29
Truscott Boat Mfg. Co. 50
Trussed Concrete Steel Co 33

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Vander Loo & Co. F. A. 51

Victorian Government Agency 1
Vulcan Iron Works 29
Vulcan Iron Works Ltd 13

Warner Barnes & Co., Ltd 21
Wen Ming Press 26
White & Co. (Inc.). J. G 53
Westinghouse Brake Co., Ltd 53
Wood Waste Distilleries Co. 41
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COMMERCE ⊛ ENGINEERING ⊛ FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, AUGUST, 1910 No. 3.

AMERICA IN CHINA (*)

By THOMAS F. MILLARD.

All great international crises have an issue which serves to formulate and focus the greater propositions involved. Recent events and present conditions indicate that the forthcoming crisis in the Far East will pivot upon the question of railway development in China.

Careful consideration of the beginnings and progress of railway development in China demonstrates that political rather than fiscal foreign interests predominated in drafting the terms by which they were built; indeed, this was so apparent that it soon provoked diplomatic action to check certain tendencies. The first important move of an international character *á propos* of these questions was the understanding arrived at among the principal foreign powers known as the Hay Agreement, which was promoted by the United States. Although this agreement is general in terms, and explicitly applies to the open door and integrity of China, the occasion of its being advanced was the tendency of railway agreements between China and foreign governments, the specific instance being some aspects of the German concession in Shantung. By this move the United States secured the assent of the greater powers to the principle that none would exploit railways in China for the advantage of itself and its nationals, and would not assert any exclusive or preferential privileges based on such concessions. Since the Hay Agreement was made public, in 1899, no foreign power has ventured openly to flout it until within the last few months, although it was surreptitiously evaded in many ways.

Prior and subsequent to acceptance by the powers of the principles of the Hay Agreement, numerous diplomatic communications passed between foreign nations and China, and between foreign nations concerning their mutual attitude toward questions involved therein. Some of these communications were secret, but the more important ones have been made public from time to time. Meanwhile came the Russo-Japanese war, which created a new balance of interest and provided eastern affairs with a new diplomatic basis. In the Portsmouth treaty are the following clauses: "*The Imperial Government of Russia declare that they have not in Manchuria any territorial advantages or preferential or exclusive concessions in impairment of China's sovereignty or inconsistent with the principle of equal opportunity;*" and "*Japan and Russia reciprocally engage not to obstruct any general measures common to all countries which China may take for the development of the commerce and industry of Manchuria.*" The Anglo-Japanese alliance, and every international agreement which has been *made public* by governments since the Russo-Japanese war relating to China, has re-affirmed these principles.

THOMAS F. MILLARD,
JOURNALIST AND AUTHOR.

I will not now review the commercial campaign of Japan in Manchuria and Korea immediately after the conclusion of peace, which made a mockery of the open door, but will confine discussion to the issue of railways. Soon after the war, China prepared to begin development of her Manchurian provinces, which long have been backward because of inaccessibility. Railways promise to change this, and to open the comparatively unsettled and fertile regions of the north to be populated and cultivated by Chinese emigrants from densely and over-populated provinces. What this means to China may be instantly perceived. Furthermore, it may be conceded that China probably has political considerations also in mind in these arrangements—it would be strange after her experience of recent years if she had not—and wishes by this means to drive a wedge between Japan and Russia, and open a way to preserve the neutrality of Chinese territory.

From China's standpoint these purposes are legitimate, and logically cannot be assumed to threaten any valid foreign right or interest. An extension of the Imperial Railways of North China northward to the Amur had been projected for years, and tentatively is marked on modern maps of the Empire. In 1897 China made a contract with a British firm (Pauling and Company) to build an extension of this railway from Hsinmintun to Fakumen. Objection was made by Japan on the ground that this extension would parallel part of the South Manchurian Railway, which Japan secured by the Portsmouth treaty, and she produced in support of her position an alleged *secret* clause of the Yuan-Komura agreement made between Japan and China, concerning Manchuria, in 1905. China denied that she had accepted this secret agreement; but Japan induced England to refuse support to the British firm, and China was compelled to abandon the project. This incident is significant in several ways, and especially because it is the first definite evidence of England's policy to support her ally in the north even at detriment to British commercial interests.

There is no doubt that China, in projecting extensions of her railways in Manchuria, designed to create there a wider international balance of interest, and to this end she desired them to be financed by British and Americans. In the summer of 1908 (August 11), Tang Shao-yi made an agreement with Willard Straight, then American Consul-General at Mukden, that American capital would be em-

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ployed in constructing the section of the proposed line from Tsitsihar to Aigun, the idea then being that the southern section would be constructed by British interests. The deaths of the Emperor and Empress Dowager, the dismissal of Yuan Shih-k'ai and other events followed, and these projects were temporarily held in abeyance. Meanwhile, Mr. Straight had notified his government of the signing of the memorandum concerning the financing of the northern section of this railway, and soon afterward was himself transferred to the State Department, which he left in 1909 to become agent in China for the American Banking Group which, with the approval of the Government, was organized to finance American participation.

The Tsitsihar-Aigun section really provided the basis for organizing the American Banking Group, for it was a definite piece of business in sight; but even for a time obscured this project by arousing international comment about a similar matter. This is the attempt by China to finance various sections of railways designed to complete the Canton-Hankow and Hangkow-Chengtu lines, and which are grouped under the name of the Hukuang loans. This loan had been projected for several years, and in 1909 an agreement was formulated whereby it was to be financed and constructed, under the usual foreign loan stipulations with some modifications, with British, German and French capital. At this juncture the American Government reminded China that the Chinese Government specifically had promised that if when it was ready to build these roads it required foreign capital, American interests would have an opportunity to participate. When other foreign interests got wind of threatened American intervention, they tried to rush the matter to a conclusion, which brought about some rather sensational moves, including President Taft's personal telegram to the Regent asking that the agreement should not be concluded without American interests being given a chance to participate. As there was no legitimate ground for excluding Americans, the other foreign interests were impelled to assent to their participation, although there was some irritation over the matter. It was agreed to admit Americans, and then followed a period of negotiation about terms which lasted several months. Discussion turned upon how construction work of various sections is to be apportioned among the four foreign interests, and in this matter England took an attitude which has resulted in practically blocking progress. It was thought that a compromise had been reached, and a meeting of representatives of all interests was appointed at Peking for September 23, 1909, when the agreement was to be signed. At this meeting Mr. Hillier, the British representative, informed the other participants that he had been instructed by his principal, the Hong-kong and Shanghai Banking Corporation, acting under instruction from the British Foreign Office, that he must not sign. The reasons nominally advanced by British interests for not signing the agreement as prepared are too complex to be elucidated here, but they involve no important principle and amount to a dispute about small details and profits; which indicates beyond reasonable doubt that political considerations actuated the British Government in its action.

While negotiations concerning the Hukuang loan thus were being tied up by England, the representative of the American Banking Group had been busy about the matter of Manchurian railway extensions. Upon consultation with the Chinese Government Mr. Straight found that it wished if possible to keep its agreement with British interests about the Fakumen section, although logically it had been abrogated when the project fell through because England would not support it. A result was that the British interest which had been thrown over by its own government in that matter came to an agreement with the American Banking Group by which a consolidation was effected jointly to promote a railway from Chinchou to Aigun, penetrating the same territory which would have been opened by the Fakumen section, but keeping far enough away from the South Manchurian Railway to avoid Japanese objections. Americans are to finance and British to construct the road. China is very anxious to build this railway as soon as possible, as it has been delayed for years by

H. E. TANG SHAO-YI
ENTERED INTO AGREEMENT WITH MR. WILLARD STRAIGHT IN 1908 THAT AMERICAN CAPITAL WOULD BE EMPLOYED IN CONSTRUCTING PROPOSED LINE FROM TSITSIHAR TO AIGUN.

war and other causes. Semi-official attempts privately were made by British diplomatic representatives in Peking to prevent a consolidation of British and American interests in this project, and to induce the British contracting firm to join with Japanese interests in the matter; but the British firm objected to this affiliation on business grounds, and it also knew that China would rather not build the road than have it financed by Japan; moreover, it was a foregone conclusion that Russia would be alarmed—and justly too—by such an arrangement. It was thought by China andby the American Group that its participation would not cause alarm. On October 2, 1909, a preliminary agreement for construction and financing of the Chinchou-Aigun Railway wassigned at Mukden by Viceroy Hsi-Liang for China, Willard Straight for the American Banking Group and Lord French for Pauling & Company. These negotiations were conducted with celerity and secrecy, for already diplomatic influence was being exerted to obstruct them. Japan, ever alert, had made inquiries of the Chinese Government, claiming that if anything was contemplated she ought to participate. Notwithstanding diplomatic pressure to prevent it, an Imperial edict ratifying the preliminary agreement was issued January 21, 1910. The British Foreign Office refused to join the State Department in requesting that the agreement be confirmed; but on the contrary notified the Wai Wu-pu that Japan should be consulted.

It now is necessary to go back to when the proposal internationally to neutralize all railways in Manchuria was made to the interested powers by Secretary Knox. This was presented simultaneously to Russia and Japan on December 18, 1909. Prior to this it had been laid before China, who was glad to assent, since its acceptance and promulgation would have relieved her of foreign interference in her northern provinces and clarified the whole eastern situation. The proposal was given publicity by Japan and Russia after they mutually had agreed to reject it. While those governments were making a pretense of taking time to consider the proposal (there is evidence that they agreed to reject it within a week after it was received), they began to exert pressure at Peking to prevent issuance of the edict ratifying the Chinchou-Aigun agreement. This is significant, for the Chinchou-Aigun Railway agreement was a factor in the matter, because it gave Americans and English a vested interest in Manchuria; and in proposing that a reversion of existing railways to China be financed by an international syndicate American interests had something to put into the pot. When it was known that an edict would be issued, effort to forestall it by previously announcing the rejection of the neutralization proposal was made, but the rejection came one day too late, on January 22. Perhaps before proceeding it should

H. E. HSI SIANG,
VICEROY OF MANCHURIA WHO SIGNED THE CHINCHOU-AIGUN AGREEMENT FOR CHINA AT MUKDEN IN OCTOBER, 1909.

be stated that the legal basis of the neutralization proposal is the vested right of China, by treaties with Japan and Russia, to purchase the Manchurian railways at a fair valuation at the end of a fixed period, now about 24 years distant; and this will be the eventual disposal of them unless Japan and Russia break the treaties; so Mr. Knox merely suggested that this recovery be anticipated.

I will discuss the reasons given by Japan and Russia for rejecting Mr. Knox's proposal only to discover their *bona fides*. There was an inspired outburst from the press of both countries characterized by a palpable effort to veil the facts with a cloud of false issues. Even statesmen joined in the chorus of misrepresentation. Count Hayashi talked about "confiscation"; which was rather an inadvertence, for Japan should be chary of referring to confiscation in connection with Manchuria. It hardly is necessary to say that the proposal contemplated that Japan and Russia would be paid for their interests. The official replies were evasive and give no specific reasons for declining. From Japan's reply one might glean that she fears that if she gives over her part of the railways to China, her business interests in Manchuria will suffer. It is not clear how, unless Japanese commerce and industry in Manchuria now enjoy special advantages from Japan's administration of the South Manchurian Railway; which Japan vociferously denies. Count Komura in an interview suggested that it would be unwise to "burden" China with the debt necessary to finance such a purchase. This is really funny. The South Manchurian Railway is now paying very well, I believe, and one hardly sees how China would suffer by possessing it providing she bought it at a fair price; moreover, Japan herself equipped it with borrowed capital, which she now owes. Russia made her official reply very vague, contenting herself with references to "interests" which would be detrimentally affected. Russia might, with some reason, have protested that it would be a pity to load China with her part of the railways, which are now losing about $2,500,000 a year owing to maladministration and peculations of officials and employees. It can be demonstrated, I think, that naturalization of Manchurian railways on the line of Mr. Knox's suggestion will benefit Russian interests both commercially and strategically, and she may soon awake to discover that she was Japan's cat's-paw in this matter. But I suppose no intelligent persons anywhere took the Japanese and Russian reasons for rejecting the proposal as seriously representing the real objections of those governments.

With the rejection of the Knox plan, which would have included the Chinchou-Aigun Railway, the diplomacy which is actively trying to keep American interests out of China was concentrated on it, and developments came rapidly. The issue raised in these negotiations contains the possible genesis of a great war which may involve the United States, and so at risk of being thought prolix I will elucidate their more important and significant phases. One cannot doubt, when the diplomatic representations are considered in sequence in the light of the existing international alignment in the East, that in this matter Russia, Japan, England and France acted by mutual agreement under a private understanding between those nations. While fully to comprehend their import requires some explanation, the various representations made in the course of putting the screws upon China and the handcuffs on American diplomacy in the Orient are extremely illuminating and significant, and I will quote the more important ones in full in the order of their presentation. In all quoted communications the italics are inserted by me for emphasis.

The Japanese Minister to the Wai Wu-pu.
January 31, 1910.

Your Excellency:

I formerly had a verbal interview with President Liang Tun-yen on the subject of the Chinchou-Aigun Railway and stated clearly to him the expectation of my Government. I also telegraphed my Government for instructions and have now a reply to the effect that this matter must be considered with extreme caution. My Government is now considering it and cannot hastily formulate its *demands*; but, as I formerly stated in my verbal interview, this is a matter which vitally affects Japan's interests. Before the Chinese Government determines anything, *the consent of my Government must first be obtained.* If the position of my country is ignored and a decision is made *without referring the matter to my Government*, it will be hard to estimate the *seriousness of the trouble* that may be caused in the relations of the two countries. I am therefore instructed to warn the Chinese Government that it must realize the necessity of caution.

With compliments, etc.

IJUIN.

The Russian Minister to the Wai Wu-pu. February 2, 1910.

Your Excellency:

Your Excellency formerly inquired of us verbally as to the view which my Government would take of assisting in the construction of the Chinchou-Aigun Railway. I referred the matter to my Government and now have the following reply:

The Russian Government regards this matter as one of extreme importance and until it has been carefully considered no reply can be made to China.

The Russian Minister is ordered to state clearly what he has already stated to the Wai Wu-pu, viz: that the Russian Government expects that China will not settle any such matter *without first consulting Russia. Otherwise there will be trouble in the relationship between the two countries.*

A necessary despatch, etc.

KOROSTOVETZ

The Russian Minister to the Wai Wu-pu. February 4, 1910.

Your Excellency:

I have received a note from St. Petersburg regarding the concession to *America* to build the Chinchou-Aigun Railway.

The Russian Minister in America has already received instructions to give Russia's reply concerning the railway *to the American Government* as follows:

Since America has invited Russia to participate in the construction of the Chinchou-Aigun Railway and has consented to Russia's desire to take time for careful consideration of the matter before making a reply, the opinion of Russia is that in not notifying Russia and in not considering that in case Russia did not take a share she would oppose the undertaking America is conscious of having made a mistake and has therefore stopped the loan negotiations. Russia expects that nothing will be settled without first obtaining the consent of Russia.

I now transmit to your excellency the general sense of the above communication and notify your excellency that this matter *must not* be recklessly settled without first having obtained the consent of Russia.

A necessary despatch, etc.

KOROSTOVETZ

In this communication M. Korostovetz begins by stating that he transmits to the Wai Wu-pu a communication which had been communicated to the State Department by the Russian Minister at Washington. From the language of the second sentence one would think that note is quoted exactly. The brutal phraseology used in the above Japanese and Russian communications to China may be tolerable coming from powerful nations to one not now able to resent insult; but it is difficult to believe that the language stated by M. Korostovetz was addressed by Russia to the United States, or that any nation would so assert paramount authority in any matter under negotiation between the United States and any third nation. In the last sentence of this note the language of M. Korostovetz seems to imply that he merely desires to convey the "general sense" of Russia's communication to the State Department. The Russian Government may deny that it did so address the United States in this matter, but it is a fact that the Russian Minister in Peking did send this note to the Wai Wu-pu, thereby causing China to think that Russia used arbitrary and dictatorial language in addressing America about relations between the United States and China. Moreover, M. Korostovetz's note contains several apparent mis-statements. He takes it upon himself, presuming to quote Russia's note to the State Department, to assert that America realized her mistake in not recognizing that she must consult Russia about engaging in enterprises in China, and had quit the negotiations. This caused the Chinese Government to make inquiries, and Henry P. Fletcher, the American Chargé d'Affaires, assured the Wai Wu-pu that so far as he knew the American Government had not so informed Russia.

HIS EXCELLENCY LIANG TUNG YEN, PRESIDENT OF FOREIGN AFFAIRS WHO MAINTAINED THAT CHINA CANNOT CONCEDE THAT SHE SHOULD CONSULT ANY FOREIGN NATION ABOUT DEVELOPMENT OF HER RAILWAYS.

In this connection it should be remembered that the Chinchou-Aigun Railway project is not the child of an American group of financiers, but is a long-cherished design of China; moreover, Americans have all along been willing to admit other nationalities to share in the enterprise if China is willing. These points should be kept clearly in mind.

The Russian Minister to the Prince of Ch'ing. February 8, 1910.

Your Imperial Highness:

I formerly had a verbal interview and also sent notes to the Ministers of Your Highness's Board on the subject of the Chinchou-Aigun Railway. I have now received my Government's instructions in regard to the reply to the American proposition for the neutralization of the Manchurian Railways and the construction of the Chinchou-Aigun Railway in the form of a memorandum, which I forward herewith.

Enclosure. A necessary despatch, etc.

KOROSTOVETZ

Memorandum in Regard to the Chinchou-Aigun Railway. Transmitted to the Prince of Ch'ing by the Russian Minister, February 8, 1910.

In respect to the expressed intention of the American Government to build a railway from Chinchou to Aigun, the Russian Government must declare clearly that this road would seriously affect the interests of Russia. This railway when completed would not only connect from the south with the Northern Manchurian Railway, but at Aigun would *reach the actual territories of Russia.* Thus it would affect both *military and political* arrangements and would materially change the relations of the Manchurian Railways *the eastern Mongolia and northern Manchuria.* Therefore this must be inquired into and an acceptable method of procedure must be decided upon, and *it cannot be permitted unless the Russian Government first knows the particulars of the proposed arrangements.* The Russian Government wishes to go into this matter very carefully, and *expects that the plans will first be communicated to it.* After carefully considering the plans the Russian Government will reply as to the construction of the railway, and *will issue a definite pronunciamento as to the conditions on which this railway may be built*

In regard to all future railways in Manchuria which China may propose to build with borrowed capital, *the Russian Government must be first consulted* and must first consider if the plans have any consequences to the *military and political interests of Russia,* or to the Northern Manchurian Railways, *thereafter determining*

what must be done to balance the influence of the arrangements made for the said railways.

Well, here we have it. All pretense that Russia's objection is based on possible commercial injury to the Chinese Eastern Railway—in fact, the construction of the Chinchou-Aigun Railway would have an opposite result—is dropped, and it clearly is stated that the chief objections are political and strategical. Which is to say that Russia formally asserts the right to regulate and control railway development within portions of China in the light of Russia's political and strategical interests, and to exclude American participation on these grounds. If language and all the logic of circumstances can make anything clear, it has done so in this instance. The fact that this memorandum was sent to Prince Ch'ing instead of to the Wai Wu-pu shows that all possible influences were being brought to bear to bully the latter, for it is well known that Prince Ch'ing takes slight interest in foreign affairs and does not keep posted about details. This move evidently was designed to frighten the Court, and bring indirect pressure to bear upon the ministers in the Wai Wu-pu.

At this point some of the reserves went into action. On February 9th, the day after the above memorandum was presented by the Russian Minister, Max Muller, the British Chargé d'Affaires, went to the Wai Wu-pu and discussed the matter with H. E. Liang Tun-yen. England was too foxy to put herself on record in writing; but Mr. Muller informed H. E. Liang Tun-yen that England feared China was going to be led into serious difficulty by America in this matter, and suggested caution, which was a diplomatic way of giving American interests a backset. He further stated definitely that his Government feels that China should *consult Japan and Russia* about railway development in Manchuria. About this time, also, the French Government came to the assistance of its ally in frightening China, and made representations.

The French Minister to the Wai Wu-pu. February 10, 1910.

Your Excellency:

The French Government with a view to China's welfare intends requesting the Chinese Government not to make any agreement with any other nation regarding the Chinchou-Aigun Railway previous to consulting Russia and Japan regarding the same. Thus international friction in Manchuria will be obviated and the welfare of all nations promoted in Asia.

DE MARGERIE.

The French Minister to the Wai Wu-pu. February 18, 1910.

Your Excellency:

The Government of the French Republic, with the idea that it is in the interest of China to avoid everything which may occasion complications or difficulties in the extreme Orient, and to maintain harmonious relations among the powers *now having interests in Asia*, desires to recommend to the Imperial Chinese Government not to conclude an arrangement on the subject of the railway line between Chinchou and Aigun *without previously having come to an agreement with the Russian Government and the Japanese Government.*

DE MARGERIE.

The Japanese Minister to the Wai Wu-pu. February 14, 1910.

Your Excellency:

The Imperial Government of Japan looks upon the construction of the Chinchou-Aigun Railway as a matter of great importance in its effect upon the prosperity of the South Manchurian Railway. Yet the Chinese Government has for its aim in constructing this railway the development of Manchuria and Mongolia. The Japanese Government takes this into consideration and makes the following propositions with a view to assisting in the construction of the road.

1. Japan will participate in the construction of the Chinchou-Aigun Railway by sharing in the loan, furnishing engineers and railway materials, and participating in the construction work. The rules under which such participation shall take place will be amicably arranged with the powers concerned.

2. In order to connect the Chinchou-Aigun Railway with the South Manchurian Railway, *China will construct a branch line from some station on the Chinchou-Aigun Railway toward the southeast to some station on the South Manchurian Railway.* The location of said line and the point at which it shall connect with the South Manchurian Railway *must* be settled by amicable discussion with the Japanese Government.

It will be observed that the Japanese Government overlooks the important consequences to the South Manchurian Railway which will be caused by the construction of the Chinchou-Aigun Railway, but certainly the reason for assisting in the construction of the Chinchou-Aigun Railway is because the projected line of the railway, starting from Chinchou and passing through Taonan-fu, is at a great distance from the South Manchurian Railway. If the proposed location of the railway is to be materially changed, the Japanese Government will have a concern in this and *will expect to be consulted.*

IJUIN.

Japan thus does not officially oppose the construction of the Chinchou-Aigun Railway, however taking care to assert her right to be consulted as to its location; but she insists upon participation, and upon terms which are impossible for China to accept without stultifying herself—which is equivalent to obstruction. This proposal by Japan to assist in financing the new line and in providing materials illuminates her *bona fides* in advancing the suggestion; for the Japanese Government is letting its railways in Japan run down for lack of money, has borrowed abroad, partly in America, the funds to rebuild and equip her South Manchurian Railway, is soon going to try to float another foreign loan for further improvements; and no railway materials of consequence are made in Japan. Nothing is more certain than if Japan should get the right to participate in financing this road she would have to borrow her share to lend it in turn to China, and that her share of supplying railway materials would be merely to act as agent for the purpose of exacting a commission.

Next followed the Russian counter-proposal.

The Russian Minister to the Wai Wu-pu. March 4, 1910.

Your Excellency:

The Wai Wu-pu formerly asked the Russian Minister verbally for the views of the Russian Government on the project of China to construct a railway from Chinchou to Aigun. The Russian Minister notified the Russian Foreign Office so that it might take it into consideration. A telegram has been received directing the Russian Minister to state that the Russian Government, having carefully considered the proposal of China to build a railway from Chinchou to Aigun, has concluded that it would result in serious injury both to the *Russian frontier defenses* and to her commercial interests.

In the 25th year of Kuang Hsu (1899) the Chinese Government declared that in constructing all railways northward from Peking capital would be borrowed from no other country than Russia. The Russian Government would not be disposed to insist upon China complying with her former promise in this matter of her borrowing capital for the construction of railways if Russia's *frontier defenses* and profits in respect to the Manchurian Railways were not affected. The Russian railway experts have reported that the Chinchou-Aigun Railway cannot fail to take from the Russian Manchurian Railway profits on transportation to the amount of 5,000,000 rubles annually, and will ruin the property which *China has a right to regain after a period of 29 years*, or which will revert to China free of cost after a period of 73 years.

The Russian Government is of the opinion *that the capitalists concerned in this enterprise* have no other object in making the loan than the obtaining of profit and *that they have no political aims.* If therefore the railway which it is proposed to build from Chinchou to Aigun should be constructed elsewhere, the commercial advantages would be equally great, while Russia would suffer no injury. The foreign capitalists should have no objection to this. In view of the above considerations, the Russian Government now proposes to the Chinese Government that instead of building a railway from Chinchou to Aigun it build a line connecting with the Peking-Mukden Rail-

way from Kalgan to Urga and thence northward to Kiakta on the Russian border. It is understood that China has long had an intention to build this railway, so that China and the foreign nations would be of one mind about this. The difficulty of China which has caused her to hesitate up to the present is that since this railway would not connect with the trans-Siberian Railway it could not be very profitable. The Russian Government would not be averse to establishing such a connection, and would be willing to build a branch road from a station on the railway in the Province of Trans-Baikalia to Kiakta. But in the event of China's building this Kalgan-Kiakta railway she should allow Russian capitalists to be responsible for building the section *from Urga to Kiakta.*

The Russian Government greatly hopes that the Chinese Government will see clearly in this proposal the mutual advantages which would accrue to both countries.

The Russian Government would gladly accede to the wish of the Chinese Government to build a railway in Manchuria with borrowed capital if it did not affect *Russia's frontier defenses* and the profits of her Manchurian Railways. Therefore Russia now brings forward this proposal and trusts that the Chinese Government will show a friendly spirit in helping to carry it out. The American and other Governments concerned have already been notified of the views of Russia.

A necessary despatch, etc.

KOROSTOVETZ.

This memorandum was immediately supported by the French Government.

The French Minister to the Wai Wu-pu. March 4, 1910.]

Your Excellency:

The Government of the French Republic, desiring to get settled the question of the railways in the north of China originally brought up by the proposal of the *Government of the United States* in connection with the construction of a railway between Chinchou and Aigun, by way of Tsitsihar, believes, however, as it has already made known to the Chinese Government, that this project (Chinchou-Aigun) cannot be realized without the risk of raising certain complications, unless by agreement with the *governments principally interested, notably Russia;* now convinced, besides, of the unfavorable consequences to Russia which the projected railway may have *in relation to her northern frontier* and the commercial interests of the Manchurian Railway, the French Government thinks, with the Imperial Government of Russia, that the interests of the financiers *who have proposed to China* with a purely commercial object a loan for the construction of the Chinchou-Aigun line will be fully satisfied if the Chinese Government should construct, with the aid of the same financiers, the prolongation of the Kalgan Railway toward Urga and Kiakta.

The Government of the French Republic is convinced that this line, the construction of which in an important Chinese region would not give rise to any political question, and, besides, having been fully considered, would likewise offer serious advantages to China.

It [The French Government] would consequently see with particular satisfaction the Imperial Chinese Government accept the propositions which have been submitted in this connection by the Imperial Russian Government.

DE MARGERIE

This concludes written representations made to the Chinese Government up to this writing in regard to this question. The Chinese Government has made so far no replies except to acknowledge their receipt; but H. E. Liang Tun-yen has verbally told ministers of several powers that China cannot concede that she should consult any foreign nation about the development of railways within her boundaries.

It is interesting to note that in the phraseology of the Russian counter-proposal suggesting a Kalgan-Kiakta line there is a reversion to customary diplomatic courtesy, and the dictatorial tone employed in previous communications is not used in this. Russia "trusts that the Chinese Government" will do so and so, and insists that China "should allow" Russian capitalists to construct the section from Urga to Kiakta, about 150 miles, thus holding China off from her border. "Must" and "shall" are not used so freely. Another point can be noticed. In previous representations the Russian Minister had explicitly denominated the American Government as going to build the Chinchou-Aigun Railway. I mention this merely to show that a calculated effort is being made to create an impression here that the Chinchou-Aigun Railway is an American political scheme to encroach upon China. In the communication of the French Minister this insinuation is maintained—"proposal of the Government of the United States" and "financiers who have proposed to China" being expressions used in alluding to the origin of this project. The French and Russian Governments know perfectly well that the United States Government never has built and does not now own or operate a single mile of railway in the world, even within its own territories, and that it has no thought of engaging in the railway business in foreign countries. It is impossible to think that the phraseology used in these official notes is inadvertent. The Chinchou-Aigun project originated with China, and was talked of for years before American participation was thought of.

But why should France, assuming to decide what is better for American financiers, break into this question? It reasonably may be assumed that one reason is that she does not wish to see the strategical position of her ally, Russia, weakened in the north; or she may have acted solely at the request of Russia. A phrase used in the French note has, however, a somewhat wider significance, and brings out an interesting suggestion. I mean the reference to the relation of Russia's northern frontier to the Chinchou-Aigun railway. This broaches a very important matter for China, and provides a clue to the solidarity of Russia, Japan, France and England in this question. These powers all have territorial possessions bordering upon China and connected with her domain by railways crossing a land frontier. The phraseology of the diplomatic representations in this instance leaves no room for doubt that a concerted effort is being made to establish a precedent that China will not be permitted to build railways toward her land borders except with the permission of foreign nations, which reserve to themselves to decide how and where such railways, if permitted at all, must be laid. It is clear that if this condition is established China never can be able, except at great disadvantage, to defend her territories from invasion.

Although Japan and Russia have in effect acted together in this question of railway development in Manchuria, it is not because of friendship between the two nations, nor yet on account of real community of interest. In fact, Russia and Japan are driven together in this matter because of hostility and fear of each other. An analysis of the strategical situation in eastern Asia clearly demonstrates this. Japan now owns and controls railways entering Manchuria and penetrating toward her point of contact with Russian influence as follows: Through Korea and via the Mukden-Antung Railway to central Manchuria; from Port Arthur, Dalny and Newchwang via the South Manchurian Railway north as far as Kuangchentze. The engineering difficulties presented in constructing the Mukden-Antung Railway and the character of the country through which it passes indicate that it perhaps never can be operated profitably, intimating that it is built now for purely strategical reasons. Then Japan has secured from China the right to build a road from Kirin eastward to Hunchun, near the mouth of the Tumen river, a short distance from Vladivostok. A road from Gensan, on the east coast of Korea, proceeding northeast to the Yalu, with a connection with the Korean railway at Anju, has been projected and authorized; and a railway connecting the proposed naval base in North Korea with Hunchun has quietly been surveyed. When these railways are finished, which probably will be within three years, Japan can throw troops into Manchuria and to the borders of the Ussuri littoral over several routes. Thus she is firmly entrenching herself in Manchuria and Korea.

Against this Russia has her part of the Chinese Eastern Railway, with the stub to Kuangchentze. It will be several years before the Amur Railway is finished. It should be noted that in Japan's representations stating her attitude toward the Chinchou-Aigun Railway, she only will

assent to its construction provided it is connected with the South Manchurian Railway. The reason is that this road would cross the Russian railway near Tsitsihar, which would make it a strategical vantage for Russia, and enable her quickly to move troops southward; while unless Japanese roads connect with it Japan would have no effective means of quickly countering such a movement. On the other hand, if this road is connected with the South Manchurian Railway, it will give Japan one more avenue to reach Russia's flank and rear. Japan so far has not intimated her attitude to Russia's counter-proposal to build a road from Kalgan to Kiakta, but there is hardly any doubt that if such a project takes practical shape (of which there is no present prospect) she would find that her strategical position would thereby be weakened, and object. Commercially, there is ample room for both these proposed railways, and both should be built in China's interest.

Perhaps it is not necessary to say more to demonstrate that rejection of the neutralization proposal and objections to the Chinchou-Aigun Railway are entirely lacking in regard for China's interests, and to plain provisions of the Portsmouth treaty; but owing to their having been brought into the discussion some other phases may be mentioned. These chiefly refer to the attitude of England. Replying to questions in parliament, the British Government has explained that its action in insisting that China should consult Russia and Japan about railway development in Manchuria is based upon the almost forgotten Scott-Mouravieff note exchanged by England and Russia in 1899, and when these nations mutually agreed not to attempt railway exploitation north of the Great Wall and in the Yiangtse valley respectively. In this connection it is interesting to recall that only a few months ago Russia made formal request to be admitted to participation in the Hukuang loan, showing that she then regarded the Scott-Mouravieff understanding as a dead letter. England now publicly drags it forward as a binding instrument upon her; but admitting that she may place her own construction upon it, how is it possible to deduce that a mutual understanding between England and Russia can affect China's rights or the rights of other nations? It is very significant indeed how all the old addenda of "sphere of influence" times are being dug up, dusted and adjusted to the present situation. At any rate, we now may learn where England stands. Compared to what Americans thought they might expect from England in the East, her recent conduct savors of duplicity. It now is felt here that England will not permit the Hukuang loan to be consummated if she can prevent it, having decided to revive the "sphere of influence" doctrine, and if possible keep other nations out of the Yiangtse valley. One cannot doubt that British statesmen have resolved to sacrifice British interests in the north rather than see the strategical position of her ally there weakened. And so, weighing advantages and disadvantages as she now sees them in the light of her broader imperial interests, England has sided in this matter with the predatory powers in China. We may be sure that England has not thrown over a large British interest and brought her quota of pressure to bear upon China without a *quid pro quo*, and we logically can surmise this to be that if similar issues arise in the Yiangtse valley—as, for instance, the Hukuang loan—Russia, Japan and France will advise China that she must not proceed without consulting England. The present impasse could not have been reached without the assent of England. We have been thinking that the interests of England and America in China are sympathetic; but evidently the present British ministry takes an opposite view.

Germany was pressed by some nations to address China in regard to the Chinchou-Aigun Railway in similar terms to those used by Japan, Russia, France and England; but she declined to do so.

To recapitulate, we find that the following issues affecting the sovereignty of China and the open door principle within her territory have been sharply defined:

1. The right of China to decide upon the course of railway development within her territory is denied by certain foreign nations.
2. Certain foreign nations have declared that their strategical and political interests must be considered as paramount in planning a railway system within China's territory.
3. Certain foreign nations have asserted the right to decide who will finance, construct and operate railways within China's territory; and to veto arrangements in regard to these matters which China has made and wishes to carry out.

In respect to the United States, this issue has been raised:

Foreign nations have asserted the right to interfere in business transactions between American citizens and the Chinese Government, in express violation of treaties between the United States and China, and of numerous solemn covenants of those governments with China and the United States; a doctrine which is susceptible to world-wide application.

In the time pending decision of these issues there will be an immense amount of representation designed to obscure what is involved, and one can foresee that much propaganda will attempt to demonstrate to the American people that their interests are not materially affected by questions thus mooted. These arguments can be classed under the following heads: that American trade and commercial opportunity in China are not worth running a risk of war to protect them; and that American commercial and financial interests and opportunities in China are not threatened by conditions which will arise if the present *status quo* becomes established. In China and throughout the world all the influences which can be employed by the international combination which has been effected in this matter will subtly and openly be used to attempt to demonstrate that America is seeking to exploit China for selfish and sinister designs, and in the interest of an American plutocracy; that she is unduly interfering where she has no adequate rights; that Americans are bent upon monopolizing the trade and development of the Far East to the exclusion of other foreign interests. Already the foreign press of the East, among which American interests have no representation, is carping in this vein; and one catches even at this distance its echoes in America and Europe. Furthermore, it seems that even the enlightened press in America is still obsessed with the idea that nothing is involved in this question except trade interests in Manchuria.

I would contradict this idea with all the force I can command. Our trade interests in Manchuria are considerable, have already been injured by conditions due to Russian and Japanese occupation, and may be further impaired by a continuation of it. Our trade with China is large, and certain to grow if not too badly handicapped. The United States is turning the corner from a borrowing to a lending nation, and within fifty years it will have more money to lend than any other two nations if present rates of national progress are maintained. China offers one of the greatest fields for this investment; and to-day China once more tentatively is being carved into "spheres" dominated by foreign powers that are commercial competitors of our nation, and doctrines are being openly asserted which logically will, if conceded or anyhow established, apply to all parts of the Empire, and to all forms of commerce and finance. Notwithstanding this, it might be argued that our interests and prospects here are not worth going to war about, if it should come to that. But the principle that any nation or nations can from consideration of their selfish interests be permitted directly to interpose between the United States and another friendly nation, and assume to decide what their relations shall be, cannot be granted nor yielded, except to force. I unhesitatingly declare my opinion that the issue raised in the matter of the Chinchou-Aigun Railway, broadly viewed, is one which any self-respecting nation, if forced by antagonistic diplomacy into a position where it is squarely put, ought to go to war about.

Americans will do well to take this question seriously. The Far Eastern situation already has modified our relations with Japan, and it appears from recent events that it will affect our attitude toward other nations, including England: perhaps may estrange us from her. If this occurs, we shall be compelled to consider whether the possession by England of her present naval superiority over us is compatible with our legitimate national aspirations and growth. We now safely may conclude that international assurances concerning the integrity of China and the open door are, in the case of several

(*) MANILA WATERWORKS AND SEWER CONSTRUCTION

The Department was organized in March, 1905, by virtue of Act 1323 of the Philippine Commission, with the undersigned as Chief Engineer. Previous to this date preliminary studies had been made of the water system by the undersigned, and of the sewer system by Mr. O. L. Ingalls. From these studies plans were prepared, and in February, 1904, Mr. Desmond Fitzgerald, Past President of the American Society of Civil Engineers, examined the plans as Consulting Engineer. He approved the design for the water system in its entirety. In the sewer system plans he advised eliminating the proposed pumping station at Calle Herran, since the movement of the currents in the bay were likely to carry the sewage into the new harbor area. When this and some other minor changes were incorporated, he approved the sewer plans also.

Immediately after the formation of the Department, the undersigned proceeded with the preparation of the final plans and specifications. Proposals for the construction of the water system were invited on July 20th, 1905, and for the sewer system on January 12th, 1906; and contracts were awarded as follows:

Water System:—For the dam and reservoir to the Matson, Lord & Belser Co.

For the steel pipe line and tunnel conduit, to the Atlantic, Gulf & Pacific Co.

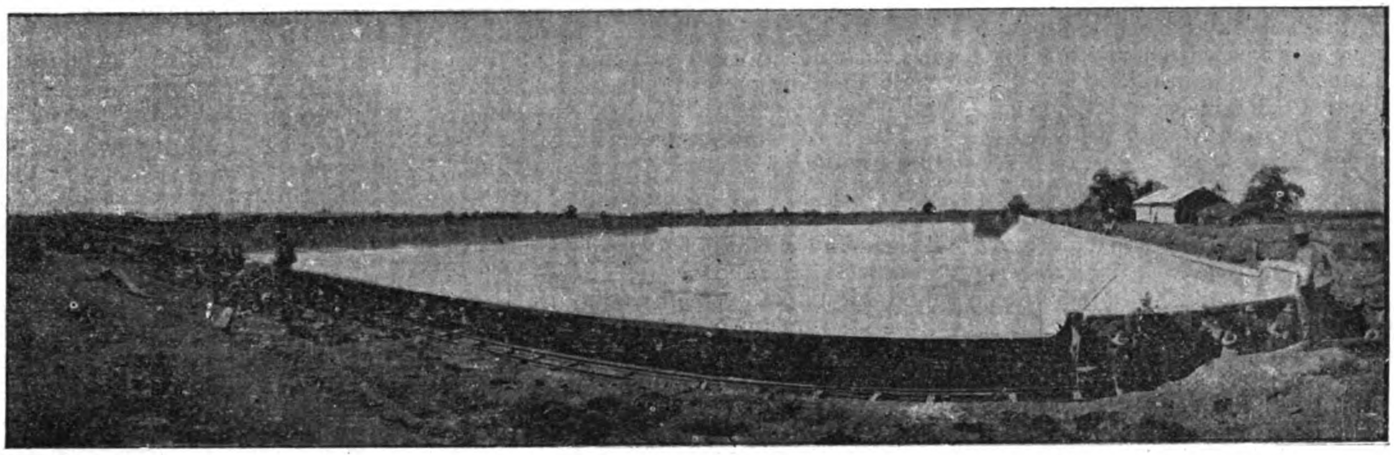
For furnishing steel plates and rivets, to H. W. Peabody & Co.

Sewer System:—For the entire work, to the Atlantic, Gulf & Pacific Co.

Construction work was promptly started by all contractors. The Matson, Lord & Belser Co. sublet the construction of the dam to Mr. Salvadore Farre, and the reservoir to the Manila Construction Company. All other work was carried on by the contractors themselves. A road along the pipe line and conduit was built by administration, the work being necessary before any contracts could be let.

Briefly stated, the water system consists of an impounding and diversion dam constructed at a gorge in the Mariquina River Valley whose elevation is sufficient to supply the City of Manila by gravity. This reservoir contains approximately five hundred million gallons of water in storage, which is sufficient to tide the city over a possible dry season when the yield of the stream itself might be deficient. The elevation of the top of this dam is 214 feet above city datum. This dam is constructed of cyclopean masonry or concrete in which large stones are imbedded, all faced with cut limestone from the adjacent mountains. It is a gravity section; that is, of weight and strength sufficient to resist any water pressure to which it might be subjected. In addition, it is arched against the water pressure as a further precaution against earthquakes or other disturbance. At both ends it is built into the solid rock. It was anticipated that this dam could be founded on solid rock throughout its entire length, but for a short distance in the bed of the stream the ledge was lacking and it was necessary to place the foundations on heavy boulders imbedded in clay, which experience proved to be impervious. The bed of the stream is approximately elevation 178, and the lowest point of the masonry is at approximately 142.

A sluiceway five feet square in section is provided through the dam, and a 36-inch cast iron wasteway will remove any possible sediment from directly under the intake. The water may be drawn from four different elevations into the inlet well. From this well it is controlled by four sluicegates, 20 by 24 inches each. After passing these gates it enters the screen chamber where, by means of a rotary screen, all fish, trash, etc, will be removed. Passing the screens, the water enters a riveted steel pipe 42 inches in diameter, approximately 10½ miles long. The first 900 feet is laid through a tunnel in the cliff forming the south side of the gorge, but from there on it was all laid in open trench. For the first three miles the pipe follows the river closely bu on reaching the broad Mariquina Valley it follows a straight line a distance of more than 12 miles to the reservoir. Under the Mariquina River a 36-inch cast iron pipe is substituted for the steel pipe. On reaching the high grounds on the west side of the River, the pipe gives place to the masonry-lined tunnel conduit. Steel plates and rivets were furnished under contract by H. W Peabody & Co., and the pipe was manufactured at the shops, built for the purpose, of the Atlantic, Gulf & Pacific Co. It was built in sections of six courses, approximately 6 feet long each, or 36 feet per section. From the shops these sections were transported by rail and wagon to the site of the trench where they were riveted together by hand. A suitable number of air valves and blow-offs were provided, and one standpipe.



GENERAL VIEW OF NEW RESERVOIR AT SAN JUAN DEL MONTE CONSTRUCTED BY THE MANILA CONSTRUCTION CO.

After riveting the pipe, and before covering it, it was pumped full of water and subjected to not less than 75 pounds hydraulic pressure. Any leaks developing under this pressure were then recaulked and the line made satisfactorily tight. On completion of the pipe line a bulkhead was placed in its lower end, and the pipe was filled with water from the headworks and placed under its entire hydrostatic head, this being far in excess of any future requirement Careful measurements of the leakage under these conditions were made, and the result was a gratifying proof of the excellence of the work.

VIEW SHOWING RUBBLE OR CYCLOPEAN MASONRY.

The tunnel and conduit is a masonry-lined horseshoe section with a vertical diameter of approximately five feet. It has masonry-lined inclined shafts for points of entrance placed at about one-half mile intervals. Considerable difficulty was encountered in driving this tunnel on account of the excessive amount of ground water encountered, but it was successfully completed. The water discharges from this conduit into the distributing reservoir on the hills of San Juan del Monte. This reservoir has a capacity of approximately 50,000,000 gallons, is masonry-lined throughout, and is provided with controlling and discharge gates. One feature of its construction is that the conduit may be used as a bye-pass so that the reservoir may be emptied and cleaned without interrupting the supply of water to the city.

*Final report of Major J. F. Case, Chief Engineer, Department of Sewer and Waterworks Construction.

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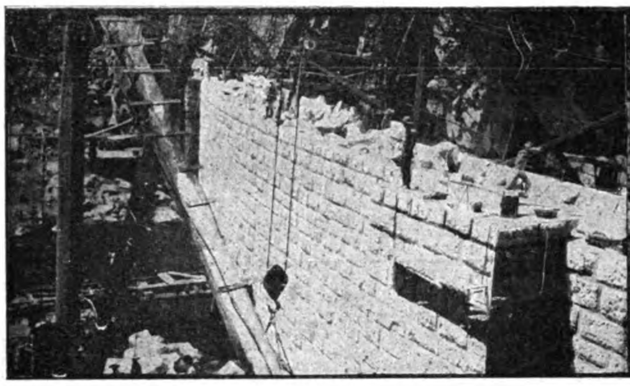
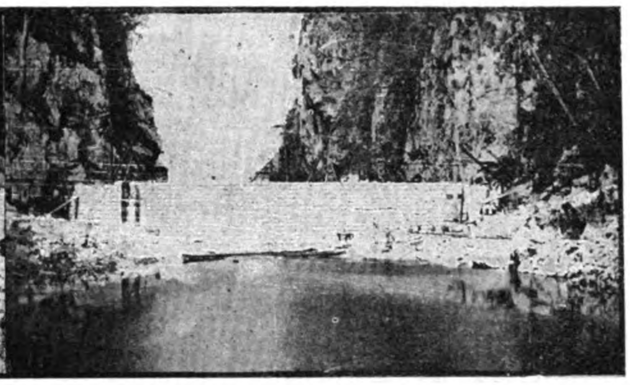
powers, purely perfunctory expressions; indeed, mention of the Portsmouth treaty in this connection causes diplomats in Peking and Tokyo to smile and make allusions to "amateur diplomacy." In respect to the railway negotiations a deadlock has been reached, with the next move up to the United States. The wall which Japanese diplomacy began to build around the Taft policy in China eighteen months ago—of which the Manchurian agreements, the Ito-Kokovsoff meeting, the Crane incident and the recall and resignation of Consul Cloud were passing evidences—has been completed, and must be breached before our government can proceed. China is helpless. She has had ample experience of what Russia and Japan will do to enforce their policies in Asia, and she is very uncertain about how far the United States will go to promote hers. War can be averted; but for this we must put dependence in a counter-play of opposing selfish interests rather than in just principles and moral suasion. This is an ugly fact, but it should be squarely recognized.

It often is said that there can be no peace without justice. There can be no secure peace in the Far East without justice to China.

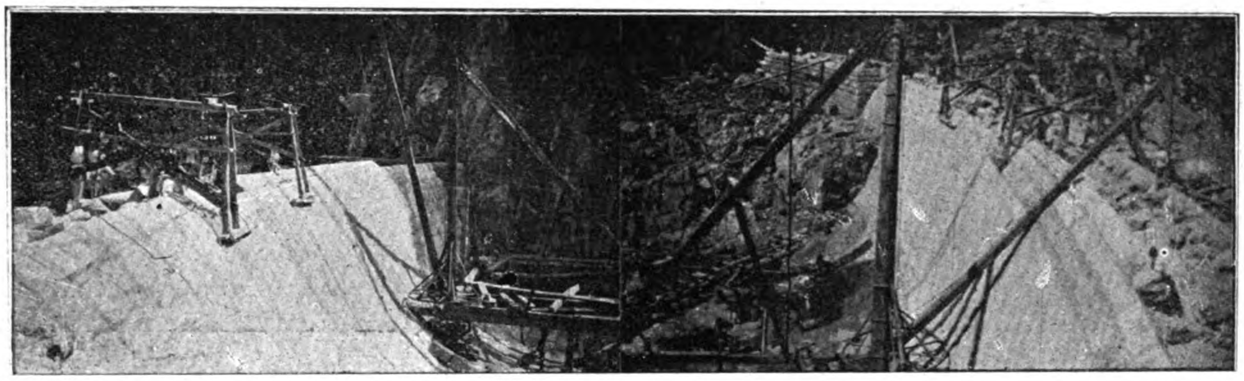
From the distributing reservoir the water is conducted to the old Deposito through a continuation of the 42-inch steel-riveted pipe. Connection is made with the old Deposito, which is kept filled with water as an additional storage supply in case of necessity. In consequence, there is at all times some 68,000,000 gallons of water available for city consumption. From the Deposito the distribution system proper begins. All pipes are of cast iron ranging in size from 42 inches to 4 inches in internal diameter. All parts of the city will be supplied. When the pipes are installed the system will afford a minimum pressure of 20 pounds at the street level in the most distant parts of the



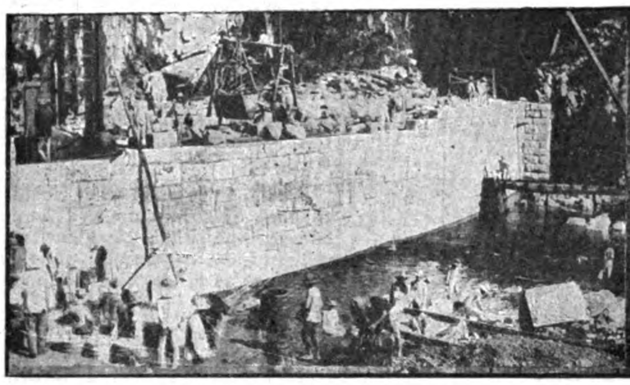
CURVE ON WHICH DAM IS BUILT.



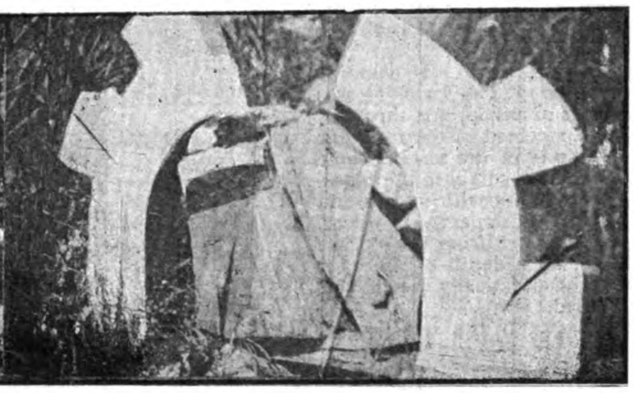
GENERAL VIEW LOOKING DOWN STREAM. DURING CONSTRUCTION.



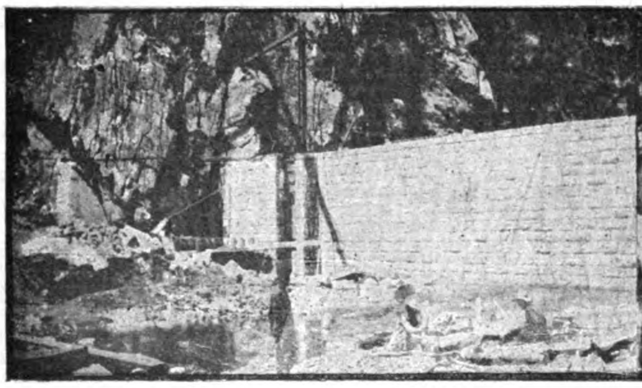
VIEW OF SPILLWAY DURING CONSTRUCTION SHOWING METHOD OF PLACING CUT STONE FACING



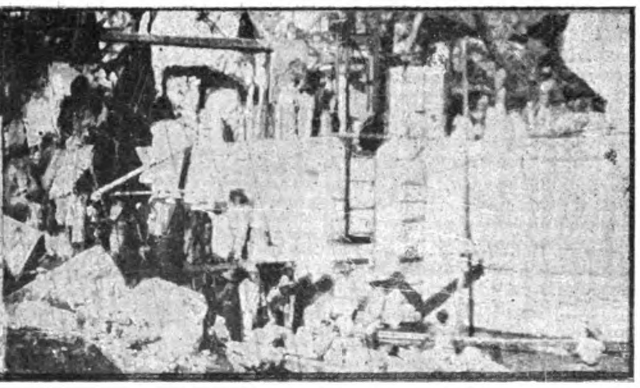
GENERAL VIEW DURING CONSTRUCTION SHOWING 5′ X 5′ SLUICEWAY ON EXTREME RIGHT



SAMPLE OF CUT STONE ARCHES OVER DOOR IN GATE HOUSE.



VIEW OF INTAKE SHOWING TWO DIFFERENT ELEVATIONS AT WHICH WATER MAY BE DRAWN OFF.



VIEW SHOWING STEEL FRAME WORK FOR OPERATING GATES AT INTAKE AND FOR REVOLVING SCREEN TO REMOVE WASTE, FISH, ETC.

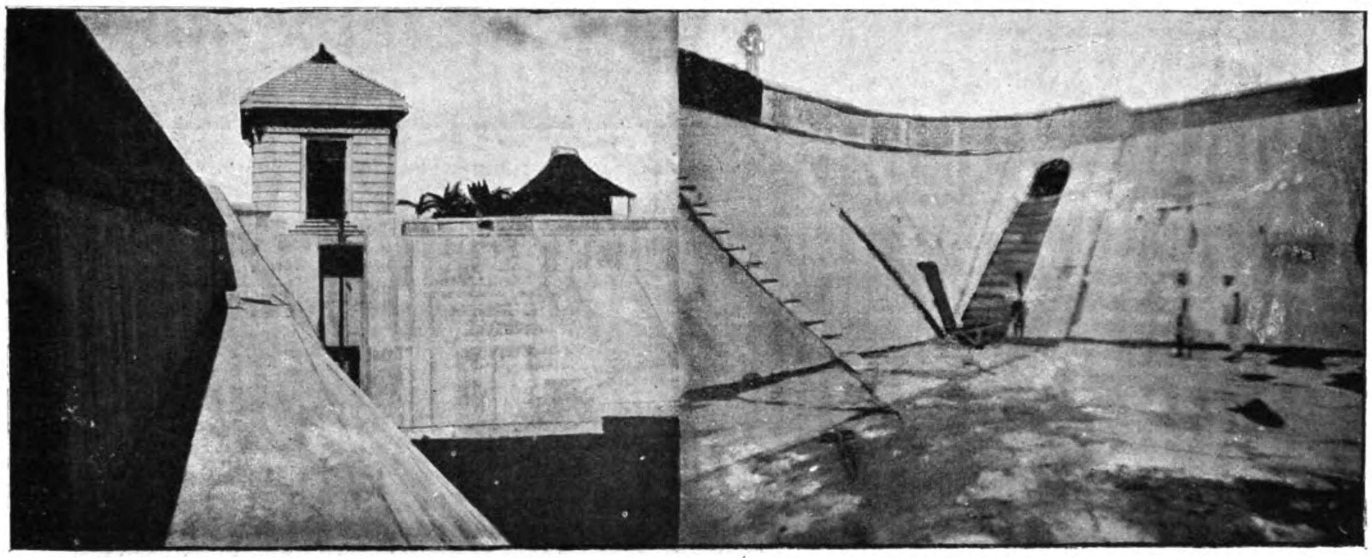
city under maximum consumption. In the design full use was made of the old distributing pipes, but these have been augmented and replaced as a careful study of the conditions showed necessary. The new gravity water supply will furnish 22,500,000 gallons of water daily to the city, sufficient for practically double the present population.

Because of the difficulties attendant upon the construction of the dam, and by reason of the outbreak of cholera in the fall of 1908 as well as for economy, a temporary in take was built above the dam and the use of the new water supply inaugurated on November 12, 1908. Since that date there has been no interruption of the new supply. This intake, although it has given good service, is not entirely satisfactory as the water is taken from a pool of the river itself, and is subject to all of the objections which pertain to shallow flowage water. It contains organic matter such as algae and water mosses as well as certain forms of animal life, tiny fish, or fish eggs, and once received in the reservoir these propagate. In spite of the screens some of this objectionable matter gets into the pipes, and there have been difficulty with meters and complaints from water consumers. However, as soon as the water is drawn from the storage reservoir and taken from a depth of 25 or 30 feet, it is believed that practically all of this trouble will be avoided.

This, however, brings up the question of ultimate purification. Mr. Fitzgerald, Consulting Engineer, recommended a purification plant to be installed as an adjunct to the water supply, but, after considering all the data presented, he agreed with my own recommendation that this should be deferred until a satisfactory method of removing amoeba from the water had been discovered. Practically all surface waters in the Philippines contain amoeba, and the long series of experiments carried out under my direction proves conclusively that slow sand filtration will not remove the amoeba. The bacterial count of the raw water supplied by the new system is low, and the water itself from that standpoint is satisfactory. The watershed itself is practically free from human inhabitants and is, in consequence, uncontaminated. Any method of purification needs, therefore, to remove amoeba before it can be considered entirely satisfactory. Sanitary science in the treatment and purification of water is advancing with rapid strides, but so far only by chemical treatment or ozone can the amoeba be removed. Copper sulphate has been tried, but not with entire success. At the present time hypochlorite of lime seems to promise excellent results. Ozone treatment is too expensive.

I recommend, therefore, that no action towards purification be taken until the storage reservoir is in service and the water drawn from the depth above mentioned, at which depth our observations indicate amoeba will be absent and the evil effects of shallow flowage be eliminated. It should be noticed, however, that in planning the gravity supply, provision was made for the purification plant. The necessary head for slow sand filters is arranged for, the site selected and should experience show it to be necessary, the plant may be installed without loss or damage to any of the works constructed. Drawings and estimates are already prepared for covering the present reservoir, although since, as stated above, the water bacteriologically is unobjectionable, I do not consider that the reservoir needs to be covered.

My own recommendation, in case purification is found essential, is that three sand filters be installed, each of three quarters of an acre in area. Dosing the water with hypochlorite of lime and alum will allow these filters to work at the rate of 10,000,000 gallons per day per acre with an effluent practically pure. The location for these filters is just beyond the new reservoir, and they can be installed for not to exceed half million pesos. This question should, however, be left in abeyance until the new system has completed service during the dry season under favorable conditions.



VIEW OF GATE HOUSE AND INTAKE AT SAN JUAN RESERVOIR.

INTAKE SHOWING DIFFERENT ELEVATION AT WHICH WATER MAY BE DRAWN. PLACING THE KEYSTONE ON SPILLWAY.

In the operation of the new system the following suggestions are offered, which must be followed if satisfactory service is to be rendered.

Whenever because of rains and the consequent rise of the river the turbidity becomes objectionable, the gates at the dam should be closed and the water for the city supply drawn from the reservoir during the continuance of this turbidity.

While the gates are closed the sluiceway through the dam as well as the 36-inch discharge pipe should be opened; and they should remain fully or partially open during the rainy season so as to allow the sediment to be flushed out.

Every year about the close of the rainy season when the stage of the river is about six feet, the water should be drawn down and workmen employed to sluice out the sand, gravel, etc., which will most certainly be deposited as the result of every flood. During the sluicing operations the gates to the city should be closed. In this way and at small expense the storage reservoir may be conserved and cleaned, while if it is neglected its capacity will be reduced and its efficiency diminished.

The pipe line should be emptied at least once a year and examined throughout. This should be done in sections so far as possible so as not to change interrupting the city supply. In emptying and filling the pipe special care must be taken to see that the air valves work properly.

At various points on the line the pipe is carried over streams or bridges, and the pipe must be examined at those points frequently to prevent oxidation where exposed to the air or only slightly covered with earth.

From time to time an examination of the pipes should be made in the rice fields near San Mateo, for it is possible that the chemicals contained in the earth may destroy the coating; and since the life of steel pipe is determined by the existence of the coating, damage thereto must be guarded against.

The tunnel and conduit need no care except a possible occasional cleaning. This can easily be done by laborers using ordinary brooms or stiff brushes, though a rotary machine patterned after that in use in Boston may be used to advantage.

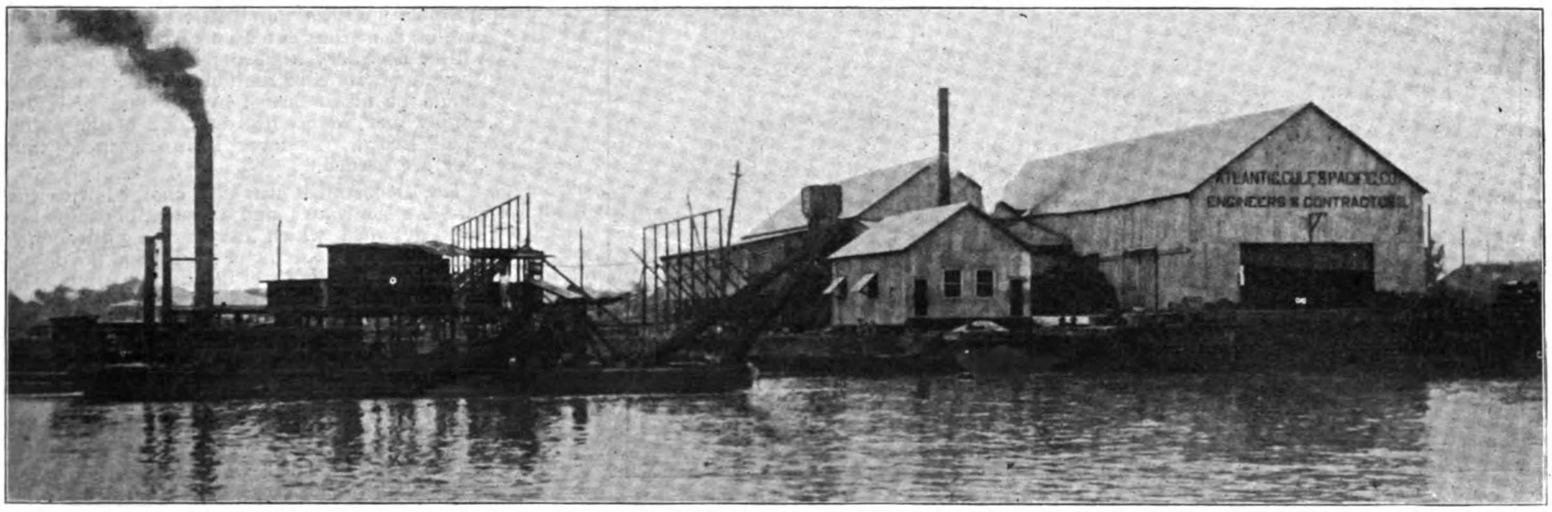
The reservoir itself should be cleaned at least once a year and the time selected when the water at the dam is clear and abundant. It is probable that the beginning of the rainy season in June is the best time.

All air valves and blow-offs should be tested from time to time, and the blow-offs especially should be opened for a few minutes and any sediment blown out at frequent intervals.

Sewer System.—The sewer system comprises more than fifty-two miles of main sewer and laterals ranging in size from 8 inches to 72 inches in diameter. The principle governing the design was that all sewers should start at their upper ends as near the surface of the ground as was possible, that the grade necessary for flow should be obtained by deepening the trenches, and that sewer pumping stations should be installed at intervals determined by the economical limit of excavated depth. This design, therefore, called for five substations in which the sewage was lifted from a lower to a higher level, and one main station at the foot of Calle Azcarraga, in which all sewage of the city is collected and from there pumped out to sea to such a distance as to avoid any possibility of offense.

All sewers 24 inches or less in diameter are constructed of vitrified pipe, and all above 24 inches in diameter are of concrete. It was intended to line the inverts of the larger sewers with brick, but because of the unsatisfactory quality obtainable concrete was substituted. This substitution is entirely satisfactory and has resulted in considerable economy. I need hardly refer to the difficulties of construction encountered. The narrow streets and the existence of ground water in practically every trench, as well as the beds of quicksand encountered in various places, made the construction difficult and expensive. There was also grave danger of disturbing the foundations of buildings; and the completion of this work without an accident of importance is cause for congratulation. Two instances are particularly noticeable: On Calle Cabildo, in the Walled City, it was necessary to go far below the foundations of the Cathedral, and the timbering and bracing of this trench involved the support of the solid stone walls thereof, fifty feet in height. No sign of crack in this wall developed as a result of this operation. In Calle Tanduay a bed of quicksand was encountered which was well nigh impassable. The contractors worked seven months to install 140 feet of pipe. In spite of all these difficulties, I desire particularly to call attention to the tightness of the sewer system. The actual infiltration of ground waters

SITE OF THE NEW DAM AT MONTALBON BEFORE WORK BEGAN.



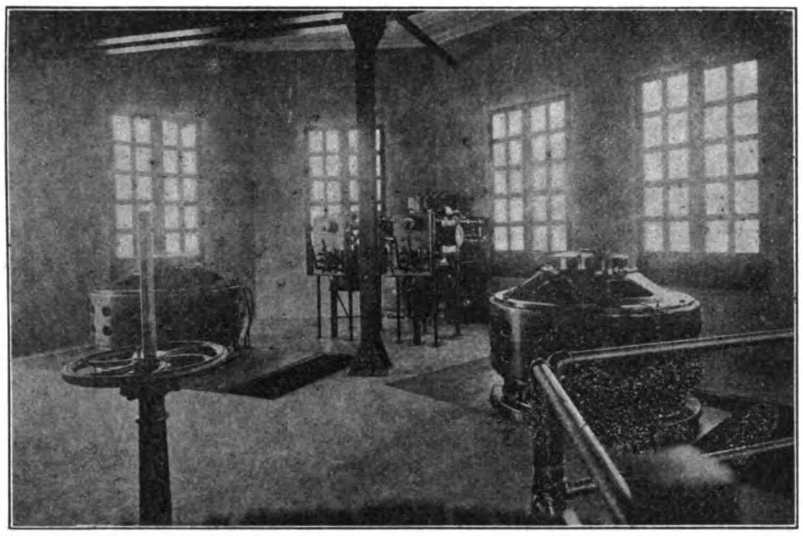
STEEL WORKS OF THE ATLANTIC, GULF AND PACIFIC COMPANY ON THE PASIG RIVER AT MANILA.

into the entire sewer system is trifling and does not amount to ten per cent of what reasonably might have been expected. The whole district of Sampaloc was absolutely tight.

Tanduay, on account of the quicksand encountered, gave some trouble; and because of settlement shortly after the completion of the system, certain of the joints were opened and the leakage became considerable. These leaks were, however, caulked on the inside and made tight at small expense, which was borne by the contractors.

the sewage in the collecting chamber has been discharged, the float mechanism also shuts off the power. The smallest substation is at Paco and the largest at Santa Cruz. It should be noticed that sewage from Paco is pumped four times before it is finally disposed of.

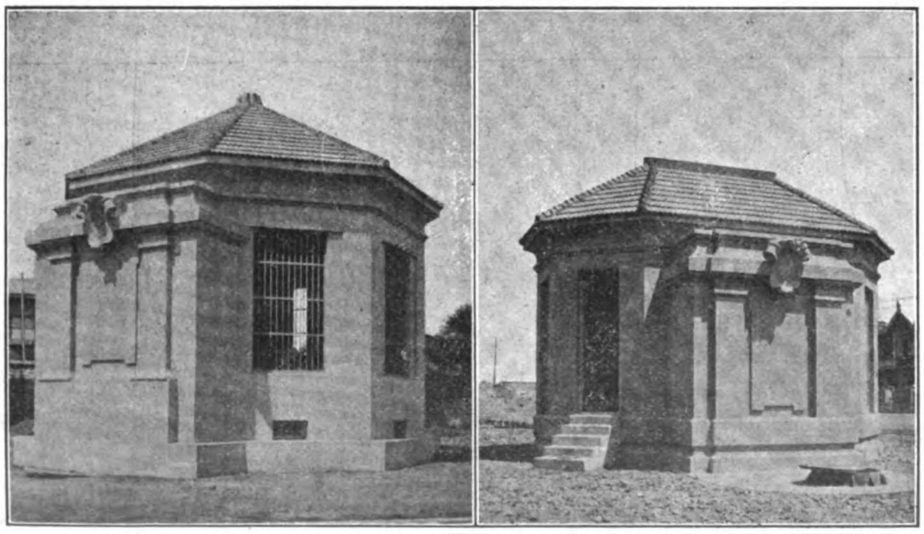
All of the substations have operated satisfactorily since installation, but the main station gave considerable trouble for several months because it was not properly balanced. This balance can only be determined by observation during operation and unfortunately the con-



INTERIOR MAIN PUMPING STATION, MANILA SEWAGE SYSTEM.—ELECTRICAL INSTALLATION FURNISHED BY GENERAL ELECTRIC CO. AND INSTALLED BY FRANK L. STRONG.

The machinery for the pumping stations was furnished and installed by Frank L. Strong, contractor, while the buildings therefor were constructed by Atlantic, Gulf & Pacific Company. All pumps are centrifugal and driven by electric motors. The main station is direct connected; that is, the shaft of motor and pump is continuous, while the substations are geared since the speed of the motors is far in excess of the speed of the pumps. The gears are of rawhide, designed to prevent noise and vibration. All pumps are horizontal, with vertical shafts, and so arranged as to be self-priming. Each substation is equipped with a float operating mechanism, so arranged that when sewage in the collecting chambers rises to a certain point the pumps will start automatically. When

tractor and the Chief Engineer left Manila shortly after completing the installation. No attention was paid to balancing the pumps in their absence, and the impression was allowed to obtain that the pumps themselves were defective. This impression gained such currency that proposals were invited for so-called repairs, and a bid involving the expenditure of more than eight thousand pesos was received. Fortunately no contract was awarded nor any work done. Immediately after my return the pumps were balanced and properly lubricated at an expenditure of less than four hundred pesos, which expense was of course borne by the contractor. Not the least of the effects of this balancing of the pumps was the notable drop in the consumption of electric current. All



SANTA CRUZ AND ERMITA PUMPING STATIONS.

pumps and motors are now operating perfectly and the entire system is a notable example of excellent construction.

Some difficulty has occurred at the main station and the Malate substation because of offensive odors escaping from the sewers. This is caused by the disposal stations of the pail system placed in the immediate neighborhood. The concentrated mass of sewage from the pails injected into the sewers without proper dilution is not only difficult for the pumps to handle, but by its mere presence generates a considerable amount of offensive gases. Under certain conditions of wind and atmosphere these odors have been noticeable in the surrounding neighborhood, and have at times constituted a veritable nuisance. A ventilating stack has been placed on the Malate station, and it is believed that there will be no further cause of complaint. Should there be further complaint, however, it may be rectified by increasing the length of the stack. Charcoal fires have been used in the ventilators; for the most part, with entire success. Though absolute adjustment may take some little time, I wish to emphasize the fact that there should be nothing objectionable or offensive about the pumping stations.

In May, 1909, the Department was authorized by the Municipal Board to proceed with the operation of the sewer system, including installation of street connections. At the present time some seven hundred connections have been made, and the applications are averaging sixty or more per month. The services of the sanity barge PLUTO have been dispensed with, all pails are emptied directly into the sewer system. Sewage and ground water combined amount to less than 2,000,000 gallons in 24 hours, and since the main pumps have a capacity of approximately 1,000,000 gallons per hour, the time necessary for operation is less than two hours daily. It might be supposed then that the pumps should have been designed for much less capacity, and this is partially true. The reason, however, has already been stated in the remarkable water-tight construction and the consequent small amount of ground water infiltration. Furthermore, there should be more than six thousand sewer connections in the city at present.

Certain of the districts of the city are yet to be supplied with a sewer system. The most important ones are the new filled area of harbor work and the districts of Pandacan and Santa Ana. None of these districts can be taken care of without installing additional pumping stations, and since the cost of these and the operating expense thereof are out of proportion to the benefits obtainable, I strongly recommend that all sewage in these districts be discharged for the present into the stormwater drains. The requirements of the Board of Health are such that this will involve the use of septic vaults, but these may be of simple construction and of relatively small expense. Whenever the development of these districts reaches a point where this proposed method is unsatisfactory, it will be necessary to install a sanitary sewer system and provide pumping stations. Within the districts already taken care of, numerous extensions from time to time will be necessary to keep pace with the development of city construction. These extensions should be taken care of by the office of Water Supply and Sewers, by direction of the Municipal Board, whenever it is convinced that they are needed.

The Department was also charged with the care of storm water, and a system of drains has been designed which covers the entire city. This involved the fixing of grades and the determination of the limits of drainage districts. In this design all existing esteros, the river and the bay were used. There still remains a large amount of work to be done in this direction before the city can be considered sanitary. Manila is low and flat. Many sections must be filled to bring the ground above the level of high tide. A necessary adjunct of this is the improvement of the esteros, and it is to be hoped that funds will be obtained shortly to undertake this work. Some years ago the undersigned prepared a preliminary plan for this work and estimated the cost thereof.

Financial.—The funds for the construction of the sewer and water system were obtained by the sale of bonds of the City of Manila, issued by authority of Act No. 1323 of the Philippine Commission, to the amount of $4,000,000.00 gold. Their sale brought a premium of $235,-484.91 in addition to their face value. The actual cost of both system has been considerable less than the estimates, and there still remains a balance of $250,000.00 unexpended, and against which no obligations exist.

Certain items not contemplated increased the cost of the works, the principal one being customs duties. Under a ruling of the Insular Collector, approved by the then Governor-General, customs duties on all materials were collected unless the City of Manila was the direct importer. Under this ruling all imported materials for the sewer and water furnished under contracts with the City of Manila paid duty. I am still of opinion that this ruling defeated the intention of the Congress of the United States, and I believe that all sums so collected should be refunded to the City of Manila. The correspondence files show several letters on this subject, and I earnestly recommend that an effort be made to obtain this refund.

Under a ruling of the Insular Treasurer a considerable sum has been paid for exchange on money transmitted from New York to Manila, and also on money from Manila to New York. Since the funds secured by the sale of bonds were deposited in New York, it would seem that checks against these funds would at least have saved the exchange rate for transmitting the money to and from Manila on payments for interest accruing on the bonds. These bonds are five per cent ten-thirties, and the annual interest amounts to ₱400,000.00.

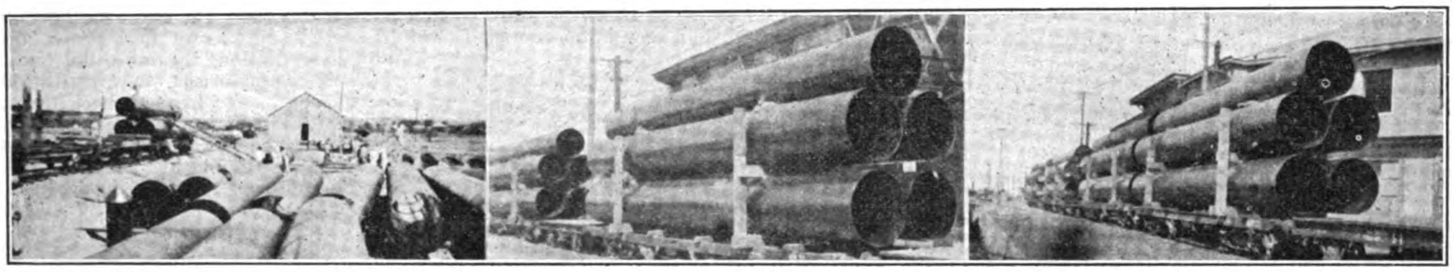
A sinking fund of $77,480.00 annually is also provided. The approximate operating expense of both sewer and water systems is $32,500.00 per annum, making a total annual charge of fixed and operating expenses of $277,480.00. The receipts from water supply for the present year will be approximately ₱360,000.00 and the difference must be made up from general taxation. As the connections with the sewer system increase and the use of water becomes more general, it is probable that the receipts will be very largely increased, and perhaps doubled. Manila's daily consumption of water amounts to less than 9,000,000 gallons at present. A city of its size should be using 15,000,-000 gallons. With no change in the rates, this consumption would pay all expenses and retire the bonds at their maturity. The unexpended balance from the sale of the bonds may be used for the sinking fund or for further extensions of water and sewer systems and stormwater drains, as the Municipal Board decides.

Personnel.—To the personnel of my Department I wish to express my appreciation of and thanks for their services. The determination of the sizes and locations of the sewer pipes by O. L. Ingalls, Principal Assistant Engineer, Sewer System, is deserving of great credit, while to Mr. C. W. Hubbell, Principal Assistant Engineer, Water Supply, the success of the water system is largely due. Mr. A. Gideon has been in charge of the stormwater drains and the distribution system, and his work has at all times been of high order. Without exception, the work of the Assistant Engineers has been markedly efficient.

I also wish to express my appreciation of the work of the contractors. In the face of many difficulties and, in general, with an unskilled labor they have carried on the work to a successful conclusion. Furthermore, they have at all times met this Department and myself in a spirit of fairness and with an evident desire to accomplish satisfactory and permanent construction. It is with pleasure that I pay them this tribute for their efforts.

In conclusion, the City of Manila is now supplied with a sewer and water system, modern, sanitary, and efficient, and of a capacity sufficient for its needs for many years to come.

To the members of the Municipal Board, both past and present, my thanks are due for their assistance, co-operation, and support. It has been a pleasure to be associated with and to serve them.



(1) UNLOADING 42" RIVETED STEEL PIPE AT SAN MATEO FOR MANILA WATERWORKS.—(2) STEEL PIPE LOADED ON MANILA RAILWAY COMPANY'S CARS.—(3) ANOTHER VIEW OF PIPE IN TRANSIT. FABRICATED BY THE ATLANTIC, GULF AND PACIFIC STRUCTURAL STEEL WORKS.

A NEW TRANSCONTINENTAL RAILWAY

For years the Pacific Northwest called for transportation facilities adequate to meet its constantly expanding needs. Each harvest season the transportation problem faced the lumberman and the farmer, the merchant and the consumer, while the occasional and unavoidable congestion of traffic on the other lines delayed commerce, impeded business, and deprived the Pacific Northwest of Dollars it had earned.

All the continent needed the products of Oregon, Washington, Idaho and their neighbors, but transportation did not keep pace with development. Well might the empire of the Northwest call for more rails and for more cars.

Answering this cry came the Chicago Milwaukee & St. Paul Railway. With a speed unique in engineering annals it extended its line over broad plains and jagged mountain ranges, through tunnels and across great rivers, until in three years it reaches its goal, with almost fifteen hundred miles of new line, and the expenditure of close to $90,000,000. Fourth among the great transcontinental railways to penetrate the American Northwest, the Milwaukee opens a new era in the linking of the East to the Pacific Coast.

But while the completion of the three earlier arrivals was marked with imposing ceremonies that were watched by all America, the new line saw its last rail laid on March 29, without any golden spike or without any brass band.

A. J. Earling president of the Chicago, Milwaukee and St. Paul Railway system, had long been looking into the Pacific Northwest, for the marvelous development of the region was the wonder of the entire country. Knowledge of world commerce, too, made clear the necessity for the Milwaukee's great network of rails, spreading over a dozen or more Middle States, to have an outlet upon the Pacific. A decade had seen the trade across the largest ocean grow with leaps, while the same ten years had witnessed the production of $1,000,000,000 in Klondike and Alaskan gold, and the development of a great coastwise business. With its connections east of Chicago, and a Pacific Coast extension, the Milwaukee would virtually span the continent.

While the Milwaukee system had been circumscribed through its lack of a gateway to the Pacific Ocean, other lines were developing great trade through Puget Sound, Portland, and San Francisco. This trade promised to increase in volume with each succeeding year.

Mr. Earling had prevailed upon his somewhat skeptical directors that the extension to the Pacific Coast was not only justified by the immediate business such an extension would gain, but that strategically the Milwaukee could place itself in an impregnable position among railways. He showed that the territory which the Milwaukee's proposed line would serve produces more than a third of a billion dollars annually from the soil, the forest and the sea, and he outlined branch lines as feeders for the main line that would bring the richest proportions of this rich territory with easy access.

He dwelt with especial stress upon the great timber wealth of the Northwest. "It's the last great storehouse of the continent's trees," insisted the president.

"If we can be assured of four trainloads of timber products a day from the forests of Washington, Oregon, Idaho, and Montana, that business will alone pay the operating expenses of our Pacific Coast Branch,"—and that was before the railways were allowed an advance in lumber rates by the Interstate Commerce Commission.

Washington is the greatest lumber producing state in the Union, while Oregon and Idaho combined equal Washington's output. These three states have an annual timber production of more than $150,000,000, while an army of 200,000 men is dependent upon this greatest Northwest resource. Annually Washington sends out of the State 110,000 carloads of lumber and shingles, while the water trade is of equal proportions.

Before construction of the 1,400 odd miles was authorized, Milwaukee engineers had tramped over and mapped every foot of the territory through which such a line would pass, and had selected a route, remarkable for directness, from Mobridge, S. D., the furthest western point in the old system, to Puget Sound. Estimates made on the cost were so accurate that later there was no call for deficiency appropriations; in fact, actual construction served to reduce, slightly, the original figures.

With accumulated experience in transcontinental-railway building, the Milwaukee was enabled to work out its problems in engineering with greater facility than its predecessors, while the advance in mechanical appliances served to condense into thirty-six months a task that a few years before would have required the greater part of a decade. Also the officials of the Chicago, Milwaukee & St. Paul financed their enterprise at exactly the right time, for their work of supplying the millions needed for the undertaking was not much more than completed when the panic of 1907 shook the confidence in railway securities and delayed many enterprises that otherwise would have been carried to early completion.

The Magnitude of the task that was accomplished in these three years is shown by the final figures. More earth was excavated, in preparing for the road-bed, than the United States Government moved in the Panama Canal zones in the years 1904, 1905, 1906, 1907 and 1908—a total of 60,000,000 cubic yards. In those years the aggregate excavation from the canal was about 55,000,000 cubic yards. Without stir or excitement this American railway company

moved in three years more than one-third as much earth as will be required in the grand total at Panama, including the locks and basis on earth side of the entrance.

Twenty miles of bridges have been built. The bridge accross the Missouri River cost close to $2,000,000, while that across the Columbia cost $1,000,000. Tunnels exceeding a third of a million cubic yards were driven. Two hundred thousand tons of eight-five-pound steel rails were laid.

Mobridge, from which the extension started, is about midway between the eastern and the western boundary of South Dakota. The first big task for the engineering department was the crossing of the Missouri. Approaches to this structure, built of solid steel and concrete, were particularly long and costly, but the spans were not as long as those later put in place across the Columbia. Each bridge affords trains a passage about fifty feet above the river's high-water mark.

The Milwaukee has sought to secure low grades, and for the most part has succeeded.

When it comes to operating the trains the "ruling grade" on any one division is the most important factor. The ruling grade is the maximum, in ordinary parlance, but it means much; if there is a stretch of say half a mile with a two per cent grade (two feet upward in every hundred) that half-mile determines the size of the train, even though the remaining 200 miles of the division are absolutely level. The ruling grade is like the weakest link in a chain. Curvature is another problem in economical operation, for abrupt curves waste the engine's power just as grades too. The Milwaukee spared no expense to make the new line as straight as possible, considering the mountainous nature of much of the territory through which it passed.

Until the line begins the ascent of the great continental divide in Montana, the grade is slight indeed, and going up the Rockies the ruling figure is 1.66 per cent, comparatively low. From Butte, into the Bitter Root Mountains, following the Dear Lodge, Hell Gate and Missoula Rivers, again there is little incline, while the Bitter Root range is negotiated at 1.7 as a maximum, the same figure reaches in the ascent of the Cascades while the downward grade on the western slope of the Cascades is only eight-tenths of one per cent.

The Milwaukee performs a somewhat unusual feat among transcontinental railways, in crossing and recrossing one of its rivals. Near Terry, Montana, it goes to the northward of the Northern Pacific, making the crossing on an overhead bridge. At Piedmont, just east of Butte, it passes to the southward again.

While the Milwaukee parallels the Northern Pacific in many places, the vast extent of the country through which it passes gives it a territory all of its own, development of which is certain to follow even more rapidly than that opened by the older lines, because of the constantly increasing stream of immigration passing into the broad areas of the Northwest.

St. Paul Pass, in the Bitter Root range, is the highest altitude which Milwaukee trains attain. This pass had attracted little attention from railroad builders before the arrival of the Earling road, but a gradual ascent was found by the engineers, and the backbone of the continent is crossed at 4,160 feet, in the longest tunnel that the new line has opened. It is 8,750 feet in length. Through the beautiful Coeur d'Alene district in Northern Idaho the line passes, and down across the fertile plains of Eastern Washington to Beverly, where the second big bridge spans the Columbia.

In crossing the Cascades the Milwaukee found Snoqualmie Pass so easy to negotiate that a construction of a costly tunnel was unnecessary at first.

"We will be able to reduce our altitude in the Cascade by some 500 feet, with a tunnel underneath Snoqualmie Pass," said Chief Engineer E. J. Pearson, of the Chicago, Milwaukee & Puget Sound, as the extension was called upon its completion. "No determination has yet been reached regarding this tunnel, and our grades now are excellent, but this Cascade tunnel will be driven in time, for the economy in fuel and powder will be great. It takes money to raise trains 500 feet in the air, and drop them back again. The tunnel as suggested would approximate three miles in length, and would require as long to drill as it has taken to build the Pacific Coast line, for, working from both ends, progress of a mile a year is considered good.

"Our St. Paul Pass tunnel has an easy grade, rising to a summit inside the mountain, but this slope is so slight that we can operate ordinary locomotives where a steeper grade would require electricity. A puffing locomotive fills the tunnels with such a dense cloud of smoke that time must be allowed between trains for the smoke to clear."

Coming down the western slope of the Cascade the Puget Sound line made what is believed to be the deepest fill ever made in original railway construction. Topographer's Gulch was as deep as a twenty-story building. It required 630,000 cubic yards of earth to fill it from side to side, a distance of 850 feet. The hydraulic plant used to sluice the earth required the expenditure of $60,000 before a cubic yard was moved.

Construction of the extension was carried forward in five sections. The eastern half of the work was supervised from Chicago, but from Butte westward the work was under the direction of H. R. Williams, who was made president of the Chicago, Milwaukee and Puget Sound as soon as the corporation was organized.

President Earling and a party of other officials of the system, including Mr. Williams, made the first trip of inspection over the new line, and expressed themselves as well pleased with its condition, but they deemed it best to delay the inauguration of through passenger could have his way regarding the equipment. The original order was doubled, and then doubled again, and to-day the business confronting the road will make good use of all the cars and engines available.

The Milwaukee has already constructed a line from Seattle, Tacoma, which is to be used jointly with the Union Pacific, and the Union Pacific this year will complete its branch line to Grays Harbor, over which the Milwaukee will operate its trains. A shrewd stroke on the part of the Milwaukee was the acquisition of the Tacoma & Eastern, a road originally built for logging purposes southeast from Tacoma and later developed into a good property with perhaps sixty miles of track. This road, still operated independently, gives to the Milwaukee access to one of the finest timber belts in the Northwest, while the Milwaukee's main line through Snoqualmie Pass opens another fine district, and plans are developing for the construction of a line northward from Grays Harbor into the virgin Olympic Peninsula, containing timber worth scores of millions of dollars.

Whether the Milwaukee will build its own line to Portland, or make a traffic agreement with the Northern and Union Pacific for use of their tracks and bridge across the Columbia, remains to be seen, but it is the announced intention of the new road to reach all the important centers of the upper Pacific Coast.

"We have been so busy completing the line to the Coast, and preparing it for traffic," Mr. Williams said recently, "that we have not had time to complete details of other extensions. Our plans are announced for entrance into Spokane, and a branch line is being built into the Cascade timber, while work is progressing at a most satisfactory rate on the Grays Harbor line, which the Union Pacific is building for our joint use. There is business enough for all the roads now entering the Northwest, and we believe that we are going to get our share. We have made traffic arrangements with the Osaka Shosen Kaisha Japanese Steamship Company to handle our business with the Orient. Six steamships are to be constructed for this line, two of which, the *Tacoma Maru* and the *Seattle Maru*, are in the service, and the third, the *Chicago Maru*, is to follow soon. The fleet is to be increased as rapidly as the traffic justifies."

It has been reported from the first that the Milwaukee would make use of the abundant waterpower along its line, for the operation of its trains, at least through the mountain divisions. Eventually it is more than likely that electricity will be the motive force for many hundreds of miles, but these plans are not matured, according to Mr. Williams.

"We are carefully investigating this feature, mapping the water courses, and measuring the available power, but further than that we have not gone," said the president of the western line. "It is true, beyond a doubt, that much water power is going to waste in the Western streams, and in time it will be utilized."

The policy of the Milwaukee, through a land department, has been to acquire large holdings of Western timber lands. Timber lands are looked upon by investors as better than Government Bonds. While the extent of the holdings of the new line have never been made public, it is stated that not less than $10,000,000 has been invested in timber in the vicinity of St. Maries, Idaho; in Snoqualmie Pass; along the Tacoma and Eastern; in the Olympic Peninsula, and in other districts.

To all shippers, but especially to the lumbermen of the Northwest, the coming of the Milwaukee was looked forward to as a boon, and the course of the new line, so far, has justified such optimism. Eagerly the lumber industry awaited the rate schedules which the new road would promulgate, and it has found that, after the great struggle on the rates between the industry and the old lines, the Milwaukee had made reductions without precipitating a rate war that might have proved disastrous. The Milwaukee declined in the beginning to enter a rate agreement with the other lines, stating it preferred to be independent. On Puget Sound the Milwaukee has instituted a car-ferry system, transferring loaded cars from the mills of the Puget Sound district by water to the Seattle or Tacoma terminals. It is probable that passenger traffic out of Seattle is to be handled through the Union Pacific Station, which is to stand opposite Fourth Avenue from the Hill station, and which is under construction at a cost of $500,000.

The growth of the Chicago, Milwaukee & St. Paul system in the last few years has caused remark in the railway world. The beginnings of the system go back to the Minnesota Central, in 1865, completed to St. Paul two years later. In 1884 its mileage reached extension the total is over 9,000 miles.

The Chicago, Milwaukee & St. Paul Railway is a strong booster for the development of the territory it serves. It has helped to spread broadcast over the country a knowledge of the resources and opportunities offered to settlers and capitalists by the Northwest, especially Montana. Farm papers, magazines, daily and weekly newspapers everywhere have carried advertising of the St. Paul extension and of the regions it crosses. The effect has been marked in the great number of new people that are coming to settle along the line of the road. New towns, new enterprises, new institutions are daily springing into being, where three years ago was nothing but the stock range. The publicity campaign of the St. Paul has had the effect, also, of stimulating the other roads to follow the same system, with the result that the whole Northwest is profiting by these great agents of publicity and of public service.

RUBBER FROM BANANA JUICE

Extensive experiments are being made in regard to the extraction of rubber from the juice of the banana plant. The original investigator was Mr. George C. Benson, and the following excerpt on the subject is taken from *The Georgetown Daily Chronicle*, British Guina:

"About two years ago, whilst experimenting with some banana juice, so as to find out how best to mordant it, a thick and pliable rubber was found to attach itself to the sides of the enamel dish which held the juice. The rubber was ultimately sent to England and to America, and it was found to be what is known as a synthetic rubber, and when compounded with other rubbers it appeared to have a distinct market value, by increasing both the weight and the value of the rubbers with which it was compounded. This fact is about to be put to the severest test, and numerous samples are to be sent to the best judges both in Europe and America."

CHINA'S ARMY AND NAVY

The appointment of Prince Tsai Tao, the brother of the Prince Regent of China, as Special Commissioner for the Investigation of Military Affairs with instructions to visit Japan, America, England, France, Germany, Italy and Russia, for the purpose of studying the military systems of the different countries, with a view to utilizing this knowledge in the proposed reorganization of the Chinese military organization, may be taken as evidence of the seriousness of Imperial Government in its announced program of developing its military strength to a degree in keeping with the modern requirements of the great empire. The selection of a member of the Imperial Family for this mission indicates the importance attached to the mission. Prince Tsai Tao is a military man of brilliant attainments and holds the position of High Commissioner of the Imperial Guards as well as that of Chief of the General Staff.

The prince and suite started in the latter part of March on this world tour making Japan his first objective and arrived at Shimonoseki March 23. He remained in Japan until April 6th, when he sailed for the United States to continue to Europe. In his suite are Lieut.-General Lord Li Ching-mai, the youngest son of the late Marquis Li Hung-chang, Ha Hanchang, chief of General Staff; General Liang Pi; Hsu- Chi-chuan, chief of horse breeding dept.; Wen Hwa, officer of general staff; Yao Pao-lai, of general staff; Pau Chi-chun, navy general staff; Chen Chin-tung, Lui Enyuan, of general staff of the army; Tien Shenchung, Imperial Guard; Cheng Shao-yuan, chief secy. army general staff; Tuag Chang, director Nobles school; Wu Wei-ya, doctor of Imperial guard; Tang Pao-chao, attaché general staff, French interpreter; Cheng Ching-pan, attaché general staff, German interpreter; Tan Hsui-kuai, of the navy.

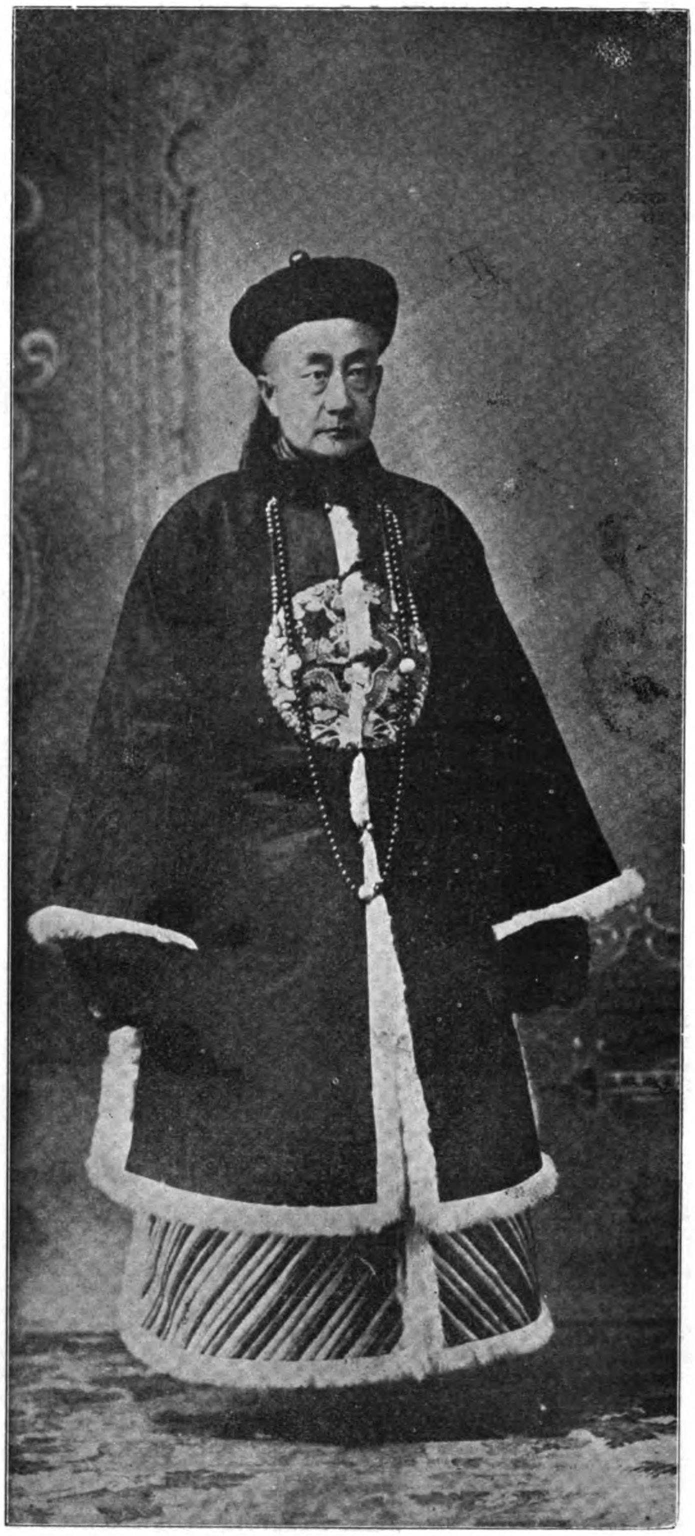
He was warmly welcomed by the Japanese and given every facility to inspect the modern military organization of that country. Reports from the United States indicate that he was warmly greeted at all the cities en route and news from Europe point to warm receptions at the different capitals.

In a speech at the dinner given in honor of His Royal Highness, Prince Tsai Tao, by the American Asiatic Association at Delmonico's, New York City, May 3rd, which we reproduce from the *Journal*, Brigadier General Ha Han Chang referred to the object of the military mission and included the latest information with regard to the present status of the Chinese military organization. In response to the toast "The National Army of China," Genera Ha Han Chang said:

H. I. H. PRINCE TSAI TAO
IN THE UNIFORM OF LIEUT. GENERAL OF THE IMPERIAL GUARD CORPS

"I consider myself fortunate that I have this opportunity as a member of His Imperial Highness' staff to visit the great city of New York and to meet the members of the American Asiatic Association who are known to have the closest relation with China. To me has been assigned the honor of responding to the toast of the National Chinese Army. I take great pleasure in giving an outline of the subject as time forbids going into detail.

H. E. TIEH LIANG
RECENTLY SUCCEEDED BY GENERAL YIN CHANG AS WAR MINISTER FOR CHINA



H. E. PRINCE YU-LANG
HEAD OF THE ARMY ADVISORY BOARD

"China as a military power dates from the China dynasty which flourished about 3,000 years ago. As every student of Chinese history knows, Chinese civilization reached its height in those days of military glory. About three hundred years ago there was a thorough reorganization of the Chinese army; at that time Peking alone had a garrison of 500,000 troops under different banners; there were, besides, other troops distributed among the provinces in army corps, divisions, brigades, regiments and battalions. These were placed under the command of high officers, who received their orders direct from the commander-in-chief. For a second time China was regarded as a military power.

"During the reigns of Hanghsi and Yung Ching in the seventh century, the Emperor himself used to lead the troops in person, and raised the military ardor of the nation to the highest pitch. With a strong hand the peace of the East was maintained, while Europe was plunged into all the horrors of war. It was found difficult to keep the army in an efficient state during a period of profound peace, and an inefficient army naturally invited political disturbance. I think Napoleon was right when he said something to this effect: 'War is the harbinger of civilization.'

"Now, China again feels the need of putting her army on an efficient basis. With this end in view the late Emperor Kwang-Hsu ordered the reorganization of the War Office, to which were especially attached the general staff of the army and bureau of military training. At the same time it was decided to organize an army of thirty-six divisions, and this work was to be completed in 1912.

"Now the Chinese army consists of eighteen divisions. Each division is composed of two brigades of infantry, each brigade of two regiments, each regiment of three battalions and each battalion of about five hundred men. Each division has also a regiment of cavalry, a corps of artillery with over fifty guns, a corps of engineers and a commissary corps.

(Continued to page 89.)

THE FAR EASTERN REVIEW

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CONTENTS

	Page
America in China	70
Manila Waterworks and Sewer Construction	78
A New Transcontinental Railway	83
China's Army and Navy	85
American-Japanese Relations	87
The Spirit of Manila	87
The Proposed Invariable Calendar	88
The Russo-Japanese Convention	89
Japanese Delegates in China	89
China's Navy	94
New Turret Tool Post	96
Remarkable Performance of Induction Motor	97
Extension Kowloon Docks	97
Large Lumber Cargo for China	98
Contracting News	98
Far Eastern Railway News	99
Philippine Mining News	101
Far Eastern Engineering, Construction, Financial and Commercial News	102
London Metal Market	105
Far Eastern Share Quotations	106

AMERICAN-JAPANESE RELATIONS

The voyage of the Hon. Jacob MacGovak Dickinson, Secretary of War, to the Philippines by way of Japan was marked by the warm welcome extended to him by Japanese officials at Tokyo and the exchange of sentiments tending to reassure the people of both countries that the traditional friendship between the two nations is not strained by the unwarranted attitude of several groups of agitators in Japan and America as well as Europe, who have been given more newspaper space in both hemispheres than their importance warrants. That this is the official attitude, and indeed the attitude of the great majority of the responsible citizens of both countries, may be asserted in view of the many exchange of courtesies that have taken place by visiting delegations representing the leading commercial interests of both countries and the warm welcome received respectively on either side of the Pacific.

Secretary Dickinson is a man of unusual attainments and stands foremost among America's substantial and patriotic officials. Selected for the post of Secretary of War by President Taft, Secretary Dickinson may be said to be imbued with the President's ideas regarding the insular possessions and Far Eastern affairs or Mr. Taft would not have chosen him to assume charge of a department in which he takes the greatest personal interest. And for this reason, if for no other, Mr. Dickinson's speech at Tokyo may be taken to fully represent the attitude of the Taft administration towards Japan. It should also allay any fears of ulterior motive in the attitude of Washington towards Far Eastern questions and dispel any thought of a disposition on the part of the American government to impose on the island empire.

Count Komura, the Foreign Minister, took occasion at a dinner given in honor of Secretary Dickinson to direct attention to the evil influences at work sowing seeds of distrust and antagonism between America and Japan. In reply Mr. Dickinson directed attention to the development of America and Japan from "hermit kingdoms" to powers having an interest in world affairs during the last twenty years and the continuous friendship during these years of progress. He pointed out that President Taft was fully conversant with Far Eastern affairs at first hand having studied them at a proper perspective, and now as chief executive was in a position to "put a true estimate upon all suggestions that might tend to disturb the relations between the two countries." There is no doubt but that he voiced the sentiment of the great majority of thinking Americans when he said:

"I think that you have justly and truly said that there is no reason why the careers of these two countries should not be pursued in parallel lines—with a certain rivalry, to be sure, but a rivalry which may be pursued in friendship without involving conflicting interests of a disturbing character.

"There is every reason why amity and cordial relations should exist between us, and to my mind there is no reason why other conditions should intervene. It is for the broadminded, patriotic people who are the leaders of thought in these two countries to dominate the situation and see that the people are not misled by false lights or sinister suggestions into an attitude which is hostile to their true interests and which could not be justified on any rational ground.

"The American people, while in a certain sense a warlike people, are yet great lovers of peace. I think I may justly say that their history illustrates that there is no more peace-loving people, or one more inclined to the principles of arbitration in the settlement of international disputes. Many differences are now willingly submitted to the character of adjudication which were formerly thought to be terminable only by resort to arms. Having such ideals, we may well hope to look forward in the future to the preservation of that friendship which up to the present time has been maintained, and to see it cemented with still stronger and closer ties."

The greatest intrigue of the last decade seems to have for its purpose the undermining of the friendship existing between Japan and America. This propaganda is given publicity in the yellow press of the United States and Japan and is egged on by a few irresponsible European writers. Little by little there has been created the impression that the interests of Japan and America were bound to clash. Then by degrees it assumed more definite proportions until now there is hardly a European writer who takes it upon himself to solve all the troubles the Far East is heir to, who does not declare that it will all end by conflict between Japan and America.

Now this may not be a well organized press campaign, but it has all the ear marks of it. Were one to trust one's ears these days, since the signing of the Russo-Japanese convention, all the nations, affected directly or indirectly by its terms, were having one continuous love feast. And while we are reading how France, England and Russia love Japan and are united together to preserve the world's peace, we find a few public men in each of these peaceloving nations declaring how unfortunate it is that America and Japan must proceed to destroy each other. The prodding continues. Japan's pride is hurt by misquotations from speeches of prominent Americans and America's pride is touched by lying reports quoted from the yellow press of Japan. The agency that distributes this seed of distrust among the citizens of the two countries must indeed be a powerful one and one to be greatly feared in the interest of peace. We wonder if despite this peace cordon flung round the globe there might not be found a publicity bureau of some proportions with a well filled treasury, that is not working consistently in sympathy with the program of international love and amity?

And so Japan must not permit herself to be misled, and if we are not mistaken the leaders of thought of the Empire are not so obtuse. And it would be well if the citizens of America would seek the motive behind all this vicious lying propaganda. It may serve the yellow press of America with a sensation once in a while, but it could not serve so continuously unless there were the purpose behind it, to keep the agitation from passing into innocuous desuetude.

We have reached these conclusions from the manner in which General Bell, Banker Shultz and Representative Hobson have been viciously misquoted recently. We have taken the liberty of carefully examining the speeches of these men and have failed absolutely to find one expression that might be construed as offensive to Japan or suggestive of hostilities between the two countries, and we do not believe that the lying reports of these speeches could have been made unless those who transmitted them were either vicious by nature or of that low order of creatures sustained by the yellow press who so lack principle that they would lend themselves to the service of just such an organization as we have suggested is now active.

We believe, however, that whether the agitation to spread distrust between the two nations, who have everything to gain by prolonged peaceful intercourse, is directed by a well defined organization is confirmed or not it behoves the intelligent from among the citizens of both nations to maintain great reserve in the reception of any reports that serve to create a feeling of antagonism between the two peoples.

It is certain that neither Tokyo nor Washington desire conflict and, so far as we can see, there is no motive for any change in that attitude. Then where is the basis for all this falsifying and misrepresentation? We believe it will some day be found in a well organized attempt on the part of interests outside the United States and Japan to precipitate trouble.

THE SPIRIT OF MANILA

There is every indication that the businessmen of Manila do not propose to confine their operations to the Philippine Islands or to remain inactive in the struggle for Far Eastern trade. For the last decade the preliminary plans for the development of a great eastern commercial metropolis and distributing center for America's Oriental trade, in a large measure, have been completed and some of them carried out to a point where it is possible to report

commendable progress towards the end in view. In this work the Philippine administration has taken the initiative and there has never been lacking the enthusiastic and hearty support of the progressive commercial community and the local press. All elements seem to unite in an endeavor to promote local pride and legitimate endeavor towards bringing to the Philippine capital the greatest possible commercial prominence.

Now in all this "boosting," as it is called locally, there is an acknowledgment of the many drawbacks to early realization of fond hopes, but these free admissions are not accompanied by any expression of hopelessness. The opposite is the case. The Manila businessman of whatever nationality is invariably an optimist, generous in the support of public movements that benefit the community at large and, in sporting parlance, a "good loser" on occasion. The trials of the last decade have brought to the fore his many desirable qualities, and now that the dawn of prosperity is here, and his personal worries are largely eliminated, he is giving a large portion of his time and attention to advancing the interests of Manila to a place among her sister cities in the Orient. He desires above all that her name shall stand for the best there is in Eastern Asia.

And it is for the purpose of attracting attention to the desirability of Manila as a distributing center for the Far East that the commercial interests and the local press there have united. The new harbor at its present stage of development is one evidence of the progress of plans for the future. Now comes the proposed declaration of a free zone where goods from all parts of the world may be stored until exported to other ports in the far east. Every effort is being made to furnish desirable berthing accommodation and cargo handling at a minimum of cost at Manila and the government is in the spirit to go further if it becomes necessary to make the port more attractive to the shipping trade. But a modern harbor does not fulfil the total in facilities that attract steamship lines and trade while it may go a long way to do so. Manila lacks coaling facilities and drydocks. And note the activity in developing the coal measures of Batan to provide desirable coal at low price. Manila is not idle in this respect and nothing but the solution of this coaling problem will satisfy them. Every other resident has a few shares of coal mining stock not because he expects large dividends, but he knows that he must help in the development of the industry if Manila is to compete with other ports in the Orient in coaling facilities.

Now about the docking facilities. This is as important as the coal if Manila would point with pride to her attractions as a port and distributing center And since Manila merchants claim that Manila is to be made the big metropolis, and therefore it is necessary to increase docking facilities, why of course they are not going to rest until they are increased. Evidence of this spirit is echoed in Manila's press that is nothing if not patriotic and progressive. The *Bulletin*, the leading commercial daily in the islands, under the caption "Manila's Future as a Distributing Center," says:

"The report of the early retirement of the Toyo Kisen Kaisha from its working arrangement with the Pacific Mail and the prospect that it has entered into an exclusive agreement with the Western Pacific for its Pacific freight carrying, makes an interesting situation in transpacific commerce and bodes well for greater activity in Oriental trade. And in it all Manila should profit.

"The opening of the Chicago Milwaukee and Puget Sound Railway was the first movement toward the breaking of the Harriman-Hill monopoly in transcontinental freights and the opening of the Western Pacific this month adds to the gayety. With their respective connections in the Pacific, the war will be extended in a merry fashion to our very door.

"The Pacific Mail does not propose to give up the battle by any means and indeed it was in that company's motive for ordering the two 38,000 steamers for Pacific waters that the news of the defection of the Toyo Kisen Kaisha became known. This involves an expenditure of about $6,000,000 and will add two vessels well to the fore compared with Atlantic standards.

"All this activity goes to show that more and more interest is being taken in Oriental trade and in this activity the Philippines should get its share of attention. The proposition to establish a free zone in the new port and to encourage the establishment of a far eastern distributing center in Manila should not lack for encouragement at this time and we believe that even if the end in view is not accomplished as soon as we would wish, we should do our share to make Manila sufficiently attractive so that once the American manufacturers begin looking for a distributing center, that Manila will offer the best facilities for the purpose that may be found in the Orient.

"At the present time we must admit that Manila does not shine as a distributing center for the East. It is confining its attention almost entirely to the island trade. And with the American manufacturers reticent about Oriental commercial adventure, the present outlook for Manila in that role is not very encouraging. However, Rome was not built in a day.

"We must make a beginning. This might be done by officially establishing a free zone. The announcement alone would prove of advertising value. Then keep up the good work of interesting American manufacturers in Oriental trade and the desirability of just such a distributing center as we are proposing to develop at Manila. It will not take many years to induce the manufacturers to make a start and the rest will be easy.

"Particularly should this movement appeal to the Manila merchant at this time when the different steamship companies show an eagerness to secure advantages in the different ports. We are in a position to offer special inducements to shippers and importers as well as the shipping companies and with one of the finest harbors in the east, there is no reason why Manila should not claim her portion of Oriental trade within the next decade. There are many advantages and inducements that might be made that would not fail to help along this program and it rests with us to figure them out carefully and place them where they will do the most good."

There is no controversy over this matter. Following the *Bulletin* comes the *Manila Times*, the pioneer daily of the Philippines, with a complete endorsement of the *Bulletin's* comment and with a handsome addition of good suggestions in the typical patriotic Manila spirit. The *Times* says:

"The *Daily Bulletin* published a very interesting and timely article on the future of Manila as a distributing point, based on the entrance to the Pacific trade of the Chicago, Milwaukee and St. Paul and Western Pacific railways, and the decision of Pacific Mail to order two new liners of large tonnage. The *Bulletin* points out the fact that Manila does not shine as a distribution point in the oriental trade and once more brings forward the suggestion that there be created a free zone at this port in order to simplify the handling of goods intended for reexport. This whole question is one of very great importance not only to the future of the Philippines but to American trade in the far east and should commend itself to all who are interested in either.

"Manila, as has been pointed out on a number of occasions, offers peculiar advantage to American manufacturers for the distribution of their products in this part of the world, but up to this time it has not been possible to make much progress with the project. The establishment of a free zone would tend to advertise it, but it will be necessary also to work among the American manufacturers and commercial organizations.

"Manila is the natural oriental terminus of the American Trans-Pacific lines, but at the present time the port lacks the facilities to make its use for such purpose possible. It has no drydock capable of handling the liners, it relies upon imported fuel and the cost of repairs exceeds the cost at Hongkong. Philippine coal measures are being opened and it will not be many years before Manila can be made an excellent coaling port, but the rest of that problem remains unsolved and probably will remain unsolved until the governments here and at Washington unite for its solution. At the present time it is the practice, especially of the Washington government, to throw business to the yards of Shanghai, Hongkong and Singapore. In this connection several million dollars have been spent in the last few years and while it has represented economy for the time being its effect has been to injure the local industry and to further set back the time that Manila will be a fully equipped port. Steps are now being taken to once more draw this question to the attention of the two governments and every person who has a spark of interest in the welfare of the community should unite in urging fair and intelligent consideration for it.

"There is a future for this port and that future can be made a very great one, but the two governments concerned have got to interest themselves in the project and lend their money and influence to the laying of the foundation."

There is always the fixed purpose of making the future of Manila something to be proud of. And Manila is succeeding. That kind of spirit will not down. Indeed, a few years ago it was no unusual thing for the wandering Manilan to find his city tabooed on every hand throughout the Orient, in Europe and in America. Today no such attitude towards Manila is found. Instead of being vilified, Manila has become, during the last few years, one of the most attractive ports in the East for tourists. Its praises are being sung everywhere. And all this is due to the spirit of the merchants and residents who have made an expensive and well directed campaign of publicity reaching every part of the world. They have entertained thousands of strangers at personal expense and, slowly but surely, the real Manila and the real Manila spirit has been recognized. And yet the good work by organization is being kept up and the year 1910 is being marked by the most effective work. The Merchants' Association is the most sanguine of all the organizations in this respect. Then there are the state societies. Each state has a committee searching for visitors from the homeland. If one is found for instance from Ohio, he will find himself the guest of a strong organization from his home state and by the time he leaves, another "booster" for Manila and the Philippines has been added to an already long list.

And in all this desire to further the interests of Manila, the spirit of reciprocity with other cities of the east is being fostered. Manila is ready to co-operate with her neighbors on any movement designed to benefit all. This has been demonstrated in many ways during the last decade. And in return an improvement in the relations among the far eastern cities, and especially towards the Philippine capital, has been noted.

Judging from the patriotic attitude of its citizens, Manila may be expected to be heard from in the future, and if the port does not secure its share of far eastern trade it will not be the fault of the men in whose hands its destiny rests at present.

THE PROPOSED INVARIABLE CALENDAR

The reform of the Gregorian Calendar has been the subject of much discussion among savants during the last twenty years and many suggestions in the direction of simplifying and revising it to meet modern commercial conditions have been offered for consideration. The adoption of some new system of dividing the year has been advanced by not a few publicists in order to eliminate confusion occasioned by the conflict of the Julian and the Gregorian calendars.

The latest proposal and which has won favorable comment in the leading journals of Europe is that of Professor Grosclaude of Geneva. In the June number of the *Internacia Scienca Revuo*, Professor Grosclaude presents a summary of his scheme accompanied by a calendar for the year. He writes:

"Imitating the liberty that Emperor Julian took in adding one day to the year each fourth year, and similarly that taken by Pope Gregorio in cutting out three days every 400 years, to keep the calendar in accordance with the seasons, I think that one may well follow the same course of action and compute a year as 364 active days, the 365th being made an extra

day which would be placed before the first of January and might be called New Year's Day. The disposition of this day would in no wise be detrimental commercially as it is a day universally accepted as a holiday.

"If this proposal proves acceptable, the remainder of the project would fall in line quite simply. The 364 days naturally divide into four equal parts and one can retain the custom of speaking of "quarters" and "half years."

"Each quarter year having 91 days divides exactly into 13 weeks in a manner that makes each quarter begin on a Monday and end on a Sunday. This practically explains the whole system. Our present Leap Year Days would be located after June 31st, and before July 1st, to be an extra day and like the proposed New Year's Day, to be part of no week and an accepted holiday.

"One of the consequences of the acceptance of this proposed calendar in civil life would be the definite fixing of national feast days, vacations for schools, the calendars of law courts, parliaments, etc. To the commercial world it would be of great convenience and benefit from the fact that the 30th day of the month would never be Sunday, while the last day of every quarter would always be Sunday. Each month would therefore reckon 30 days. As a result percentage calculations and the striking of commercial balances would be greatly facilitated. In addition to this the fixed calendar could be easily memorized, a thing impossible with the Gregorian Calendar."

The calendar accompanying this comment is a simple division of the year which begins on a Monday and ends on a Sunday. Each quarter is divided into two months of 30 days and one month, the last month of each quarter, 31 days, the 31st day being a Sunday as described above. This places 31 days in March, June, September and December.

There is no change in this calendar from year to year excepting the addition of Leap Year Day between June 31st and July 1st when it is due. The holidays marked are fixed dates such as Palm Sunday, March 31st, Good Friday, April 5th; Easter Sunday, April 7th; Pentecost, May 26th; All Saints, November 1st, and Christmas Day, December 25th.

THE RUSSO-JAPANESE CONVENTION

The official publication of the terms of the convention, July 17th, confirmed the unofficial reports as to its character upon which we based our comment in July. As given out by the Japanese government the terms of the convention follow:

"The Imperial Government of Japan and the Imperial Government of Russia sincerely attached to the principles established by the Convention concluded between them on the 30-17 July 1907 and desirous to develop the effects of that Convention with a view to consolidation of peace in the extreme east have agreed to complete the said arrangement by the following provisions:

"ARTICLE 1. With the object of facilitating communications and developing the commerce of nations the two High Contracting Parties mutually engage to lend to each other their friendly cooperation with a view to amelioration of their respective railway lines in Manchuria and the improvement of the connecting service of the said railway and to abstain from all competition prejudicial to the realization of this object.

"ART. 2. Each of the High Contracting Parties engages to maintain and respect the status quo in Manchuria resulting from the treaties, conventions and other arrangements concluded up to this day between Japan and Russia or between either of these two powers and China. The copies of the aforesaid arrangements have been exchanged between Japan and Russia.

"ART. 3. In case any event arises of a nature to menace the status quo above mentioned the two High Contracting Parties shall in each case enter into communication with each other in order to arrive at an understanding as to the measures they may judge necessary to take for the maintenance of the said status quo."

The French press continues unanimous in approving of the convention. The *Temps* believes the two powers have every reason, mutually, to look after their own and each other's position, which, in spite of the theory of the "Open Door," is by force of circumstances a privileged one. It finds great satisfaction that the respective allies of England and France are drawn into closer intimacy and that the danger of misunderstandings in Europe over Asiatic questions have now been eliminated.

The *Débats* declares that the convention is a definite answer to the attempts of China to regain her ascendancy in the territory involved and to the Knox proposal to assist her by means of the neutralizing of Manchurian railway. The *Débats* is also pleased that it will give Russia a free hand in Mongolia and removes all objection to the early annexation of Korea by Japan.

The American press with few exceptions take little interest beyond passing comment and generally accepts the convention as a satisfactory adjustment of the connecting services of the railways controlled by the two countries in Manchuria. The *New York Herald*, however, takes the view that the convention is prejudicial to the interests of Germany and the United States.

The *San Francisco Chronicle* states that Secretary Knox, while trying to achieve something in Manchuria in China's interest, succeeded only in making an exploitation partnership possible between Russia and Japan. "The Japanese-Russian scheme," says the *Chronicle* "is to make joint rates for railway freight, build railway feeders, settle immigrants and otherwise exploit the country. There is not much 'neutralization' in all this; and incidentally, considering Hay's note and Knox's letters, very little politeness."

The German press is generally reserved in its comment witholding judgment until the economic aspect is more fully developed. The German foreign minister upon being officially notified declared that he expected the Open Door principle to be maintained in the future.

The Japanese press generally endorses the agreement. The *Jiji Shimpo* takes the public into its confidence and states that France and England were consulted by the contracting parties at every stage of the negotiations; were heartily in accord, and that this may be taken as indicative of the official approval of three of great powers of Europe. The *Kokumin Shimbun* says that the principle underlying the convention is the desire of the two powers to remove any possible cause of friction between them. It refers to the objection of Germany and Austria to the free hand it gives Russia in the Near East as a feature with which Japan has nothing to do as it is not probable that Japan will ever become mixed up in the Balkan trouble. The entire Japanese press denies the existence of a secret convention as has been alleged, giving Russia a free hand in Mongolia and Japan the privilege of annexing Korea.

The British press is not unanimous in its approval of the convention. The *Times* declares it is a fresh contribution to the peace of the world, but the Manchester *Guardian* believes it is mainly directed against the United States, while the *Standard* is of the opinion that it is directed against China's aspirations to reestablish her sovereignty in Manchuria.

But China officially and through the press is far from pleased with the manner in which the two countries proceeded to an agreement respecting her territory without consulting her, and, suspicious of Russian and Japanese designs, hints at a secret understanding.

In reply to the official notification of the signing of the convention the Waiwupu issued the following note:

"The Imperial Chinese Government having carefully perused the new Russo-Japanese Convention, concluded on July 4, 1910, copies of which were handed to the Waiwupu by the Russian and Japanese Ministers in person, the following acknowledgment, dated July 21, has been sent to them:—

"Since the Convention expressly states that each of the High Contracting Parties engages to maintain and respect the treaties, conventions and other engagements concluded between China and Japan, between China and Russia, and between Japan and Russia, the Convention, therefore, accords with and confirms the principles of the engagements entered into by Japan and Russia by the Treaty of Peace of 1905 and those of the treaty and agreement concluded between China and Japan relating to matters in the Three Manchurian Provinces. For by Article III of the Russo-Japanese Treaty of Peace, Russia and Japan mutually engage to restore entirely and completely to the exclusive administration of China all portions of Manchuria and declare that they have not in Manchuria any territorial advantages or preferential or exclusive concessions in impairment of Chinese sovereignty or inconsistent with the principle of equal opportunity, and by Article IV Japan and Russia reciprocally engage not to obstruct any general measure common to all countries which China may take for the development of the commerce and industry of Manchuria. In the same year China and Japan named their plenipotentiaries and agreed upon and concluded articles at Peking, based on the Treaty of Portsmouth and relating to matters in the Three Manchurian Provinces, whereby the opening of Manchuria became an accomplished fact.

"The Imperial Chinese Government will, therefore, in the future, act in accordance with the principles declared in the Treaty of Portsmouth and execute the provisions of the treaty and agreement with Japan, maintaining with increased efforts such matters as measures arising from the exercise of China's rights of sovereignty, the principle of equal opportunity, and the development of the commercial and industrial prosperity of three Manchurian provinces, with a view to the promotion of the best interests of all parties.

"A copy of the above acknowledgment has been presented to the Governments of all the countries with which China enjoys treaty and diplomatic relations."

This promises to become a historic document and will have a bearing on the situation in Manchuria when the time arrives for the retirement of Russia and Japan from the Eastern Provinces.

H. E. Chang, Minister to the United States, is quoted as saying that the convention has interfered with the conclusion of the Chinchow-Aigun agreement and that Americans sincerely regret that their benevolent purpose in proposing the neutralization of the Manchurian Railways has led to a further restriction of China's sovereignty in that region.

Altogether, no incident of the year has created more world wide attention.

JAPANESE DELEGATES IN CHINA

The reception of the Japanese delegates at Shanghai, June 16th, was one of the most important during an interesting tour of the principal points in China of a representative body of businessmen, and all the visitors have expressed themselves more than pleased with their reception and their experiences as guests of the Chinese. The purpose of the visit, as announced, was to promote closer commercial as well as friendly relations with the Chinese. From all accounts the party succeeded in making a good impression. The Nanking correspondent of the *Mainichi Dempo* refers optimistically to the visit of Mr. R. Kondo and his party and expresses the belief that the result will be a more friendly spirit among the Chinese toward Japan. All the newspapers have referred in a friendly tone to the visit including even the papers of anti-Japanese tendencies. Already, says the correspondent, there are signs that the Chinese are beginning to regard Japan more as a friendly neighbor than a hostile rival. At the reception at Shanghai Mr. Chu-Ching-tzen in his address of welcome stated that the relations between China and Japan should be strengthened by more friendly intercourse between the businessmen of the two countries.

In reply, Mr. Kondo stated that the amicable relations between China and Japan were the seedbed of peace in the extreme east and that the peace of the extreme east was at the bottom of the peace of the world. Reference was made during the visit to the racial and language kinships which would be wasted if not utilized in furthering mutual economic interests.

CHINA'S ARMY AND NAVY

(Continued from page 86)

"In order to increase the efficiency of the service the Prince Regent thought best last year to detach the general staff from the War Office, and appoint His Imperial Highness as Controller General, with myself as chief officer. I need hardly add that it is the settled purpose of His Imperial Highness to use the utmost endeavor to bring the Chinese army to the highest state of efficiency. With the view of giving dignity to the military profession, he proposed last year that the Emperor should assume the title of Commander-in-Chief of the military and naval forces of the Empire, and that during the minority of His Majesty the Prince Regent should act in that high capacity.

"It was the practice for the eighteen divisions of the imperial army to guard Peking by turns, but last year the Prince Regent thought this inconvenient, and ordered the organization of a special body of troops for the protection of the palace, with himself as Commander and Prince Tao as Inspector General.

"China, on account of the extent of her territory, the density of her population and the length of her coast line, needs a large army for protection and defense. It is the purpose of the Prince Regent to provide the country with such an army. The object of this mission is to carry out the ideas of the Prince Regent in this regard.

"I consider it a great privilege to be able to see in so short a time so much that is interesting and instructive in this country from a military point of view. For this privilege I have to thank the Government and people of the United States."

Ten years ago, China's military organization might be said to have been a negligent quantity. The carrying of arms was not considered an honorable profession with the result that none of the better class of Chinese took the slightest interest in providing a comprehensive army for the defense of the country and, indeed, the internal system of military police was far from satisfactory.

It might be said that H. E. Li Hung-Chang was the first to initiate a movement to encourage a military spirit among the younger generation. That was over eleven years ago. He established military schools and did everything in his power to induce the better class to take a course of training and accept a career in the army. The brilliant success of H. E. Yuan Shih-kai, with his Northern Army developed under modern training, made a marked impression on the Chinese people and did more than anything else up to that time in elevating the Chinese conception of the profession of arms.

Then followed the demonstration of Japan, with her splendid military organization during the war which removed the prejudice against the soldier and impressed the better classes of China with the necessity of an effective military force, modernly equipped to preserve the Empire to herself and save her from the humiliations to which she had for many years been subjected for lack of a proper military spirit. Judging from the activity along military lines now manifest throughout the Empire, it may now be truthfully said that the old Chinese proverb, "no good man would be a soldier, no good iron would be a nail," no longer guides the intelligent Chinese mind.

The present status of Army organization in China is based on the Imperial Edict following the recommendation of H. E. Yuan Shih-kai providing for the organization of thirty-six Divisions of 12,500 men each to be known as the National Chinese Army. The original intention was to have this organization complete and an army of 450,000 trained soldiers ready for the field in 1918. According to German authority, this organization will be effected in 1912 or six years earlier than proposed.

This National Army is exclusive of the Imperial Guard Corps, comprising three divisions and an aggregate of 30,000 men, and the provincial troops. The reorganization of the Imperial Guard as outlined by the Prince Regent by the decree of December 3rd, 1908, and provided for its completion of the organization in two years. The provincial forces are a separate body of men and aggregate according to various estimates to about 500,000.

Gen. von der Boeck of the German Army, in an article on the Far Eastern situation and particularly the relations between Russia and Japan in the *Deutsche Revue*, directs attention to what he terms an important factor as affecting these relations, in the renaissance of the Chinese military power. "Japanese instructors," he writes, "swarm in China, and are swiftly building up a mighty military machine as their ally."

"The original plan of the Chinese Government was to form thirty-six divisions, each of 10,000 men, and to have this entire force ready to take the field before the year 1922, but it is perfectly evident from the reports which have filtered through to Europe that this huge army will be ready by 1912, or ten years earlier than was originally intended.

"Gen. von der Boeck is inclined to believe from the reports of German officers who have recently visited China that in 1912 the Chinese will possess a well equipped army of half a million men, the greater part armed with modern weapons and with a discipline and organization infinitely superior to anything which China has hitherto produced. Gen. von der Boeck thinks that Japan's policy of Asia for the Asiatics, with Japan at the head of the coalition of the yellow races, will then be within measurable distance of realization."

The tour of investigation under the direction of H. I. H. Prince Tsai Tao will no doubt result in new interest in the many military departments, and the skeleton plans now being followed will be developed in a comprehensive scheme along the most modern methods selected from the best now in vogue in the leading countries of the world. It was thus that Japan worked out her splendid organization, adopting the best and excluding the more antiquated. China proposes to benefit by Japan's experience.

The National Army (*Lu-Chun*). The Imperial Edict of June 1, 1907, established the Ministry of Army Affairs (Lu Chun-pu) comprising a President, two Vice-Presidents, two Councillors and two secretaries. H. E. Tieh-Liang was the first president. Prince Ching held the post of Senior President of this board until October, 1909. The Lu-Chun-Pu was intrusted with the entire control of the organization of the new army. It is divided into a central department, a military council and ten bureaus.

GENERAL YIN CHANG AND STAFF AT THE ANHUI MANEUVERS—RECENTLY PROMOTED FROM MINISTER TO GERMANY TO WAR MINISTER TO SUCCEED H. E. TIEH LIANG.

The Council handles matters of organization and intelligence, and the ten bureaus deal largely with corps matters, such as transport or quartermaster, commissary, arms, ammunition, artillery, forts, recruiting, military law, cavalry, etc. In addition to the bureaus, there is a General Staff divided into 5 bureaus and sub-divided into 15 sections. Its prescribed establishment is 58 officials and 14 military officers, who work out plans of national defense, and supervise generally the instruction of officers for the staff and control the military academies and schools. The active direction of the Lu-Chun is controlled by the Board, though for organization, discipline, supply and pay the provincial viceroys or governors are responsible. The latter are also responsible for the efficiency of the troops alloted to their respective provinces which are periodically inspected by generals attached to the central board.

According to an edict issued on February 17th, 1910, H. E. Tieh Liang, President of the Ministry of Army Affairs, was given a month's leave on account of severe illness and Shin Shun appointed to act for him on the Board of War. The same edict named Na Ching, a brother of Na Tung, as Vice-President of the Board of War. Later H. E. Tieh Liang submitted his resignation and General Yin Chang, Chinese Minister to Berlin, was appointed to succeed him. Many reasons are given for Tieh Lang's resignation, among them that the Prince Regent had refused to recognize a loan of Tls. 800,000 which the former had contracted on behalf of the Board of Army Affairs and as result H. E. Tieh Liang is said to be personally responsible for its redemption. Other authorities accredit it to his recognition of his waning influence since the organization of the Imperial Guard, the independence of the General Staff and the establishment of the Naval Bureau were confirmed. Others claim that he was untrue to his old friend Yuan Shih Kai and

forced the latter out of politics as a return for the latter's influence in securing for him recognition, and now he in turn finds himself out in the cold, and t is said by influences not unfriendly to Yuan Shih Kai.

Of his successor the Berlin Correspondent of the *North China Daily News* says:

"General Yin Chang has the reputation of being fully alive to modern military developments. Shortly before his return to Germany he greatly impressed German military critics by refusing to allow some manoeuvres to be interrupted by the death of the Emperor. This was regarded as a perfectly correct attitude which would almost certainly be adopted in similar circumstances in this country. A little later he won the unreserved respect of European diplomatists by refusing to allow himself to be recalled from his post after the death of his mother, preferring to remain at work rather than to accept the usual three years' leave of absence during the period of mourning. The General enjoys probably a greater measure of popularity than any other Oriental diplomatist in Germany.

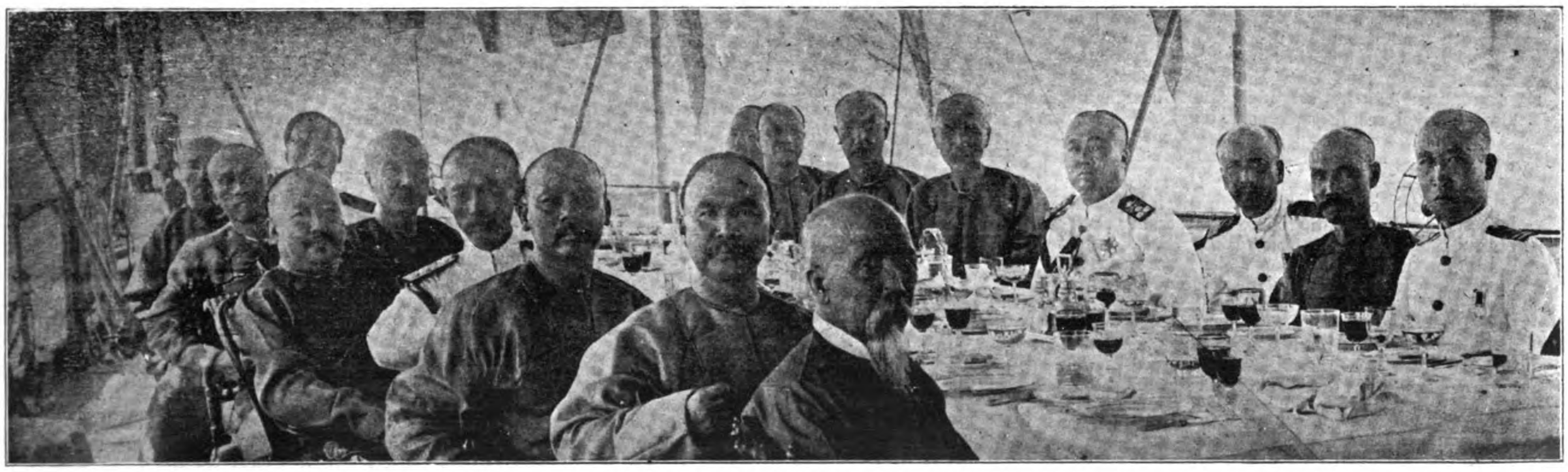
"He is expected to produce a further and noticeable improvement on the most approved modern lines in the Chinese military organization. For his own part, however, he does not think so highly of the possibilities that lie before him. A few days ago, meeting His Excellency at the reception of the Foreign Press Association, I asked him whether he were glad to be going home, expecting, of course, the common-place reply. To my surprise he remarked 'No, I am not glad to be going back. I would rather have remained and worked here. I do not think that our country is yet sufficiently far advanced for a man to be able to achieve great results in a short space of time. I do not look upon my appointment either as an enviable one or one in which I am likely to be able to achieve any very striking results.'

"I gather that the change will not be made at any rate for a couple of months until after the return of the Prince and the special Chinese Commission to Berlin."

Reuter on March 24th announced that, in the course of an interview with the *Lekal Anzeiger*, General Ying Chang said that he contemplated introducing universal military service in a modified form into China and also to found military training schools. These plans, he said, would doubtless bring him into conflict with the Ministry of Finance. He, however, intended to submit his plans to the Prince Regent and if the difficulties proved insurmountable he would resign.

A Peking telegram to the *North China Daily News* says that the proposal was recently made to replace all the older officials in the Ministry of War by graduates with modern military

H. I. H. PRINCE TSAI HSUN
PRESIDENT OF THE NAVAL BOARD



H. I. H. PRINCE TSAI-HSUN
PRESIDING AT A LUNCHEON ON HIS FLAGSHIP. AT THE PRINCE'S LEFT IS ADMIRAL CHING, AND OPPOSITE SITS ADMIRAL SAH

training, and this proposition provoked a storm of ill-feeling on the part of the old officials who number over 2,000 men. It was partly due to this reason that ex-President Tieh Liang hastened his resignation; and it is stated that the new President elect, H. E. Yin Chang in Berlin, is none too anxious to face the situation and has tried to defer his return as long as possible, on the ostensible ground of waiting for Prince Tsai Tao's arrival in Germany.

The Imperial Guard of China.—By Imperial Decree issued December 3, 1908, the Prince Regent appointed Prince Tsai To, Prince Yu Lang and H. E Tieh Liang Special Commissioners to supervise the training of the Imperial Guard and at the same time appointed Prince Pu T'ung (younger brother of Prince Lin), T. E. Ha Hang Chang, Hsu Chih Shan, Chang Yu Chun, Tien Hsien Chang, and Wen Hua Military Councillors. The Prince Regent retained the right to supervise the work of the commissioners and its councillors and under this plan the organization of the Imperial Guard was begun.

There had been what was called the Palace Guard dating from the reign of Emperor Kuang Hsu. Among the officers in charge were Chiang Kuei T'i, Chan Hsun and other Han generals, but the political disturbance of 1838 introduced many factions in the court and continual strife between the Manchus and Hans made the situation far from pleasant and exposed the Throne to an attempt of the Hans to remove the person of the ruler. Indeed, upon the death of the late Emperor and Empress Dowager it was found necessary to assign a part of the Sixth Division at Nan Yuan to duty in Peking as the soldiers guarding the Forbidden City were considered insufficient.

The Prince Regent, no doubt, realized that the throne would be more secure with a well organized body directly under his control. One censor is reported to have submitted a memorial in which he pointed out that the imperfect condition of the Palace Guard would increase the audacity of knaves and urged such an organization as the Prince Regent afterwards decided upon. It is expected to give the Prince Regent greater security and strengthen the unsteady political power of the Sovereign in the event of a crisis.

According to the *China Tribune*, the time given for the complete organization of the Imperial Guard of China was two years divided into four periods, and when carried out would consist of a training bureau, two brigades of infantry, one regiment of cavalry, one regiment of artillery, one battalion of engineering corps, one battalion of army service corps, one battalion of machine gun corps, one company of communication troops, one company of railway corps, and a military band, making in all 30,000 men.

The organization for the first period was completed on the 17th of the 9th Moon, this year. This consisted of one regiment of infantry and one regiment of artillery, both selected from the 1st Division stationed at Pei Yuan. The Battalion Commander is Ting Chan. Colonel Whang Wang is a soldier who received modern military education, and occupies a prominent position in the military circles in China. Of late, Gen. Liang Pi became the commander of the brigade, and through his efforts, good results were obtained.

Gen. Liang Pi is one of those military men who sincerely expect to do great things for China's army in the future. A strict man, the general is eager to maintain discipline, and by picking out young officers possessing modern military education and placing them under his command, is endeavoring to modernize his troops. His reformatory, decisive action must be said to be in accordance with the spirit of China for building up a new army.

Later, there was a little change in the special Training Commissioners of the Guard, H. E. Tieh Liang being relieved by Prince Tsai Sou at the time when the Naval Staffs Bureau was established.

It is the purpose of the Prince Regent to make the Imperial Guard the model organization of China's military system. The strength is being selected from men picked from the First Division and the Banner men Class. Care is taken in the selection of the equipment, and in this particular it is an improvement on the Sixth Division better known as the Pei Yang Army. The present artillery consists of eighteen German guns to which are being added a number of more modern pieces ordered from Germany. Khaki colored cloth is used for summer uniforms and a heavy gray tinted material for winter. The manual of arms is modern and exhibitions of drill impress the visitor with the precision with which commands are obeyed. The soldiers are familiar with the open and close formation. Indeed, the Imperial Guard shows every indication of proving all that the authorities expect of it.

Some criticism might be made of the selection of the cavalry horses and their equipment, but as this is a matter of detail, it no doubt will receive the proper attention in due course.

Although the troops for the first term have been successfully organized in a comparatively short space of time, whether the rest, that is to be formed in the proposed limited period of two years, can be completely made up, equipped, and trained, is a question which can not be answered at the present juncture in confident affirmation. The work consists to organize one regiment of infantry, one battalion of cavalry, one battalion of artillery, one company of engineers, and one company of army service corps, by conscription, and has been been going on ever since the 20th of November, it being expected to be completed by the end of the present Chinese year.

Manchuria.—The activity of Russia and Japan in the Eastern Provinces has served to create a feeling of insecurity among the Chinese leaders lest China's authority in that important region be endangered and every effort is being made to so police the territory with Chinese soldiers that there could be no pretext for military occupation on the part of either of these powers. Among the many excuses for the extension of Russian and Japanese police powers in this section of the empire, the depredations of the Hunghutze, or "red beard" bandits, threatening foreign property, has always been the most prominent. It served to cover the organization of a large force of railway police, etc., regardless of treaties and agreements providing for the respect for China's integrity. China believes that the struggle in the Far East between Russia and Japan is almost sure to be renewed. It involves neutral Chinese territory and every move on the part of either power to strengthen her position for the future conflict is realized as an added menace to Chinese authority in Manchuria.

General von der Boeck's opinion is that peace between Russia and Japan cannot be preserved beyond the close of 1912. This is also the opinion of M. Glemser, a member of the Industrial Delegation of the Russian Council of Empire. It is pointed out that the Russian troops now in the Far East aggregate 200,000 on a peace footing and this can easily be increased to 300,000 without drawing from European Russia. The double tracking of the trans-Siberia adds to the force of these conclusions. Vladivostock is being strengthened and the building of the Amur railway is another indication that Russia is in the Far East to remain.

On the other hand Japan is engaged in strengthening her position. Her army has been increased from thirteen to nineteen divisions since the close of the war. It is estimated that on a war footing her army would not number less than 550,000 men and 120,000 horses and this could be increased to a million at short notice in the event of hostilities.

This German authority is imbued with the belief that when the trouble comes China will be forced into the position of ally to Japan. He bases this conclusion on the information, he believes reliable, that the new Chinese National Army is being organized along Japanese lines and drilled by Japanese officers for just such a purpose.

There is reason to believe that China does not desire to be drawn into this struggle and that she is anxious to so assert her sovereignty over Manchuria as soon as her present agreements with Russia and Japan expire, to the exclusion of foreign influence. To be able to do this, she knows she must have a strong military force backed by a strong central government. During the last few years China has consistently opposed every move designed to ignore her sovereign rights in that territory. She has been relying on the promises of the powers to recognize that sovereignty and while she has reason to doubt the sincerity of some of her professed friends, she proposes to do her part to the extent of her power. Her growing military spirit may be taken as an indication of her policy in that direction. The recent proposal of Secretary Knox has cleared the atmosphere somewhat, and China knows now just how much she may rely upon the agreement of the powers to maintain China's integrity and assist her in maintaining the "Open Door" And so she is providing for the future maintenance of her authority by increasing her forces in the Three Eastern Provinces.

The latest statistics available on China's forces in Manchuria are furnished by the *Golos Moskvy* as follows:

"In all three provinces of Manchuria the field troops at present comprise 38 battalions of infantry, 6 divisions of cavalry, 18 artillery batteries with 2½ guns, 1½ battalions of sappers, and 1½ survey companies. The men number 19,153 infantry, 1,344 cavalry, 2,267 artillerists, 630 sappers, and 630 surveyors, a total of 24,024 regular troops. The reserve comprises the following divisions:—In Mukden province, 16 infantry and 28 horse battalion; in Kirin province, 18 infantry and 15 horse battalions; and in Tsitsihar province 6 infantry and 15 horse battalions, with 1 infantry and 7 mounted battalions sent from Mukden. The total reserve is thus 41 infantry and 65 cavalry battalions. The men number 12,341 infantry and 12,285 cavalry, a total of 24,626. According to the scheme of military reforms in Manchuria it is intended to increase the above reserve strength in time of peace by 22 battalions of infantry, 9 divisions of cavalry, 27 batteries with 135 guns, 3½ battalions of sappers, 3½ battalions of surveyors, the number of men being as follows:—11,078 infantry, 1,916 cavalry, 2,592 artillerists, 1890 sappers, and 1,890 surveyors, a total of 19,366. In war time this number is to be further increased by 41,328 infantry, 1,916 cavalry, 2,592 artillery, 4,410 sappers, and 4,410 surveyors, a total of 54,656. Thus in the event of war, the Manchurian Army will, according to the scheme, reach 122,672 men."

This number may of course be augmented by the well-drilled Manchuria police. These police have accomplished much in destroying the raiding bands in and about Harbin. The Russian police had endeavored for years to give protection to life and property, but little success resulted until the work was taken in hand by the Chinese police under the direction of H. E. Shih Shao Shi, Customs Taotai of Harbin. These forces are divided into small mounted and dismounted companies. Wherever they have been operating for any length of time they have displayed unusual ability in coping with the lawless element and in the field, as scouts would prove invaluable.

Many incidents of clashes of authority between the Chinese and Japanese officials find their way into print and whether serious or not, is indicative of the zealous spirit of the Manchurian officials in their endeavour to force respect for Chinese authority. For instance, the native papers directed attention to an incident relating to the policing of the Kirin frontier. It appears that General Wu Lu-tseng, Imperial High Commissioner in charge of the Kirin frontier defences, made an arrangement with the Viceroy of Manchuria, Hsi Liang, that he (the former) should bring with him a portion of the army from Moukden to strengthen the frontier guards. Shortly after the conclusion of that arrangement, Viceroy Hsi Liang received warnings from the Wai Wu-pu that the latter had received intimation from H. E. Hu Wei-te, Chinese Minister at Tokyo, to the effect that the Japanese Government had informed said Minister that if China despatches more troops to the frontier, Japan would do the same thing. On the receipt of the above message, Viceroy Hsi Liang at once withdrew the promise which he had made to Lt. General Wu Lu-tseng.

Recently, however, Lieut. General Wu Lutseng has wired to Viceroy Hsi Liang that a number of Japanese soldiers had secretly crossed the Tiumen River and had gone as far as Lu Tao-kow, on the pretence of replacing their former guards, and that the troops he has at his disposal are unable to cope with the Japanese. He is utterly helpless and asks Viceroy Hsi Liang to despatch troops to his assistance. Hsi Liang is placed in the most difficult position, not knowing what step he ought to take in the matter.

The above would indicate that the local officials in Manchuria desire to maintain Chinese authority but without substantial support from Peking, all their good intentions come to naught.

Viceroy Hsi Liang, who is strongly in favor of a large force for frontier defence, applied to the throne for Tls. 300,000 annually for the purpose until the Three Eastern Provinces were independent of outside assistance. He received but Tls. 100,000 out of the Dairen customs receipts.

During the last few years China has undertaken the policing of all the territory outside the railway zones and opposed tooth and nail any interference with her authority. The reconstruction of the Antung-Mukden Railway by the Japanese gave occasion for differences growing out of the policing of the railway right of way, but after some delay in negotiations the matter was adjusted. Several clashes have been reported between the Chinese and Japanese police, but China's sovereignty is recognized and late advices are to the effect that conditions are now satisfactory. The following is a report from Seoul given out by a Japanese attaché of the Residency General at the Chientao Branch:

"According to investigations up to the end of June last, there were 82,999 Koreans, 273,712 Chinese and 250 Japanese merchants in Chientao. The rumoured dispatch of more Chinese troops is a mistake, due to the arrival of Kirin troops who relieved the garrison. The number of the garrison was 3,500, but the figure is thought to be less at present, as many of them left on the expiry of their term. Japan has 2,000 gendarmes and 4,000 Korean police in the place. The situation is peaceful and there is no fear of outbreak though occasional collisions take place."

Mongolia.—The fear of Russian encroachment prevails among the Mongolian princes. Prince of Turgut, who recently returned from Japan where he concluded a course in military training, is a leader in a movement to inaugurate a comprehensive defense of Western Mongolia. Lack of means of communication and of co-operation on the part of the Mongol leaders have been a great drawback to any attempt to join interests in this direction. The new national army scheme does not include Mongolia, but Peking has a well defined plan to encourage Mongolian support. The construction of railway lines connecting Peking with the different sections of the border province is in this direction and it is noted that Mongol Princes are receiving marked attention from the Prince Regent. The colonizing of Mongolia, by encouraging Chinese from the thickly populated sections of the Empire to settle there and develop the country, is another movement that is receiving Imperial encouragement.

Few statistics are available with regard to the military forces scattered throughout Mongolia, but several authorities are quoted placing the number at about 40,000, all of whom have been drilled by Japanese instructors and armed with modern rifles. All the frontier posts have been strengthened and in Kobdo and Uliasseitai where Russian influence is very strong the government is active in organizing a military force under the direction of a Chinese instructor, a graduate of a German military school.

OFFICERS OF THE MANCHURIAN FOREIGN-DRILLED ARMY

The construction of the railway extension from Kalgan to Kiakhta, it is believed, will strengthen the Imperial interests in Mongolia and give a quicker service to Europe over a line entirely controlled by the Chinese to the border.

It is proposed to establish division headquarters at Hsining, Altaishan, Chahar, Kobdo, Ili and Urga and concentrate all the forces at these points. The development and training of these forces have been very slow for the reason that it was difficult to secure instructors, but recently the Mongols are taking more interest and the scheme as outlined will no doubt soon be greatly advanced. Arrangements have been completed to instal a system of wireless connecting Mongolia and Chinese Turkestan with the land wires in Kansu to bring these outlying regions of the Empire in closer touch with Peking and encourage interest in imperial affairs.

Tibet.—A similar program to that in Mongolia is being carried out with regard to Tibet. The colonizing of the territory is being encouraged, a railway connecting Szechuan and Tibet proposed, and telegraph communication established. With the successful outcome of the recent punitive expedition consisting of 25,000 men under the command of Chao Erh-feng, the Prince Regent has turned his attention to establishing Chinese sovereignty more firmly in that outpost. The conversion of Tibet into a province or the establishment of three provinces to be organized out of Tibet and Szechuan has been proposed and is receiving the consideration of the government. A successor to the Dalai Lama deposed by the Chinese forces has been ordered and great interest is being taken in the selection of a successor. Every effort will be made by the Central Government to reorganize Tibet so as to secure the co-operation and loyal support of the Tibetans in the development of a military force for frontier defence, and especially to resist the encroachments of Russia in that quarter.

The provincial authorities of Szechuan have always had a great deal of trouble with the border tribes and it was for this reason the recent expedition through to Tibet was undertaken to complete the subjugation of that territory. In connection with this campaign some reference has been made to the arsenal at Chengtu furnishing ordnance and ammunition to the forces upon their advance. A correspondent of the *North China Daily News* writing from Chengtu recently describes these works as employing 350 men and boys and the output 5,000 rounds of ammunition and four rifles of indifferent pattern daily. Describing the establishment the correspondent writes:

"The rifles appeared to be of an indifferent pattern and I noticed the bullets did not fit the cartridge cases closely and were plugged in every case with a slip of paper to make the lead bullet a fixture in the cartridge.

"There are three German employees, but we did not see any sign of them. They seem to be employed in the new works going up. The whole works had the usual Chinese stamp of slipshod, go-as-you-please style about them.

"I noticed an old 1894 pattern of American made Hotchkiss mountain gun taken to pieces and being slavishly imitated. I should imagine it would take them a fortnight to turn out one of these little weapons at double the cost of importing a new and up-to-date pattern.

"I observed the lead, zinc and copper employed and learnt from a communicative foreman that the mixture was not good and that they were unable to prepare good cartridge cases; they gave me a sample.

"The most busy part of the establishment was the mint which was running full plant and time, and turning out over half a million copper coins of 10 and 20 cash per day. They are using zinc, copper (local and American) and lead in the production of the coins. The coin as far as one can judge is of a high standard compared with most of the coins turned out in China and in other provinces.

"The machinery was supplied by Germans, but comes largely from Manchester and Birmingham with a sprinkling from Germany. The new plant will deal largely with the manufacture of a German water-jacketted rapid-firing machine gun somewhat like a maxim. I saw the one specimen they had at the works, which, we were informed, they were going to imitate."

Yunnan—The building of the railway by the French to Yunnan-fu has been slowly developing a situation, from the Chinese point of view, not unlike that in Manchuria. Native reports, received from time to time from that region, are to the effect that the French have scattered a large force of Annamites along the line of railway in Chinese territory for the purpose of creating dissatisfaction among the natives in the border provinces who are inclined to be revolutionary. These reports are no doubt exaggerated and as gun running has been a popular diversion of adventurers of every nation, it is not improbable that the

French are not by any means responsible for all the encouragement given these people. The provision for railway guards along the line is now the cause of much friction. In the meantime the Central Government is suspicious of French designs on Yunnan. This is the natural outcome of her experience in Manchuria and for the last two years Peking has been endeavoring to strengthen her defences in that province. The Viceroy was instructed to expend Tls. 2,000,000 supplied by the central government last year to defray the expenses of organizing and equipping the two new divisions allotted to that province and to construct a line of forts along the frontier. But the usual delay is noted in securing results. The present Viceroy is moving very slowly. A huge fortified camp in course of construction about seven miles to the north-west of the city of Yunnanfu is after all not to be built just yet. Mountains of bricks and stones are lying about, but the Viceroy will not yet sanction further expenditure. The divisions have been ordered for service in Yunnan and these soldiers will be assisted by provincial forces. The local authorities of Yunnan in policing territory along the border fear conflict with French interests for the reason that the support from Peking in maintaining Chinese authority on the Yunnan border is about as unsatisfactory at the present time as in the Eastern Provinces.

Indeed, on every hand, the Chinese Government finds itself seriously handicapped and humiliated for the reason that her military equipment is far too limited to inspire respect. That this condition will not continue indefinitely there is little doubt. China is awakening, and every time she suffers a fresh humiliation, she renews her efforts in the direction of comprehensive military organization. And she has now the benefit of a growing military spirit among a large majority of the people, where formerly, her situation seemed hopeless.

Finances.—The Imperial Treasury will maintain the Board of War, General Staff, the Imperial Guard, military academies, arsenals and six divisions of the National Army allotted to the Metropolitan Provinces. This represents Tls. 90,000,000 in the budget of which Tls. 25,000,000 will be utilized for uniforms and equipment and an equal sum for arsenals. The balance of the thirty-six divisions are to be provided by the provinces at an estimated expenditure of Tls. 60,000,000 or Tls. 2,000,000 to a division

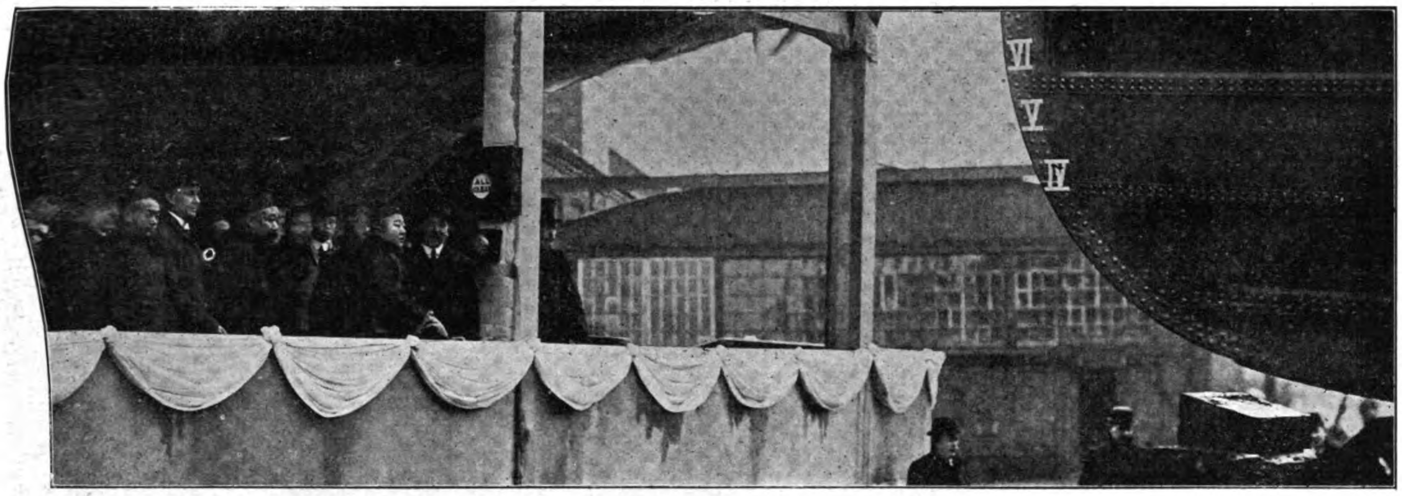
The great obstacle in the way of carrying out the army program is the lack of control by the central government of the provincial finances. It is not unusual for the viceroy or governor to report that he is short the necessary funds to take care of the provincial military allotment. In every case an appeal for assistance from the imperial treasury has been refused and there is every indication that official heads will be lopped off for responsibility for failure to provide funds for this purpose. It may be said that this attitude on the part of the Prince Regent is having its effect and as time passes the prospect for more loyal support from the provincial officials in financing the setting up of their quota of soldiers is brighter. It may be expected, however, that not a few examples will be made of viceroys and governors who fail to appreciate what Peking expects of them before the disposition on the part of these officials in many sections to plead poverty is overcome.

Military Schools.—There are a large number of graduates from foreign military schools whose services are being utilized in the training of China's future military leaders. These graduates were trained principally in Japan while many are graduates of French, German and American academies. It is stated that the class in Japan in 1908 numbered about 1,000. These graduates are serving as instructors in China's military schools, under the supervision of foreigners, mainly German and Japanese experts. Heretofore, the principal military schools included one each at Tientsin, Wuchang and Nanking. A new one is being built at Taiyuan-fu in Shensi and the establishment of elementary and intermediate schools in the provinces are included in the new program. The Staff College at Peking will provide special courses of training in the different arms of the service and the students will be selected from among the provincial candidates by competitive examination. German drill and Japanese organization prevail throughout the course in all the schools.

Arsenals.—The manufacture of ordnance has been undertaken at the different provincial arsenals. Small arms were turned out at the rate of 50,000 per annum from Wuchang, Te Chou, Canton, Shanghai, Chengtu and Kaifeng Fu. The program provides for the abolishment of the provincial arsenals and the establishment of three large Imperial plants located in the North, Center and South. Of these, the Hanyang Arsenal is the only one in operation. The sites for the other two have been chosen several times but no definite action was taken.

CHINA'S NAVY

The progress made in the reorganization of the Chinese Navy has not been rapid, but there is evidence that the Commissioners, appointed to devise ways and means, have made a careful study of the subject. The financing of the project offers many discouragements, but as the plans assume shape there seems to be no lack of increased interest in the project. It might be said that it has been decided to encourage the training of a large number of students abroad and a nucleus for the big naval scheme had been arranged which will consist of cruisers, gunboats and torpedoers, the construction of battleships being deferred until later. Exhaustive plans have been under consideration for the establishment of naval bases, docks, etc., and of naval academies. So far little progress has been made in actual accomplishment.



VISIT OF THE IMPERIAL CHINESE NAVAL COMMISSION TO THE CLYDEBANK SHIPYARD OF MESSRS. JOHN BROWN & CO., LTD.
H. I. H. PRINCE TSAI-HSUN ABOUT TO LAUNCH H. M. S. FOXHOUND.

It will be remembered that an Imperial Decree issued from Peking, July 15, 1909, directed attention to the investment of the authority of supreme command of the Army and Navy in the Prince Regent and concluded with the appointment of Prince Tsai Hsun and Admiral Sah Chen-ping as commissioners to devise means for the Navy Organization. Later, these commissioners made a tour of Europe making study of naval organization and administration.

At this time the existing navy consisted of the Peiyang Squadron having for its bases Chefoo or Taku, the Nanyang Squadron at Nanking or Shanghai, and the Kuangtun Squadron at Canton. These squadrons represented a strength of twenty serviceable vessels, the maximum not being more than 4,000 tons. There were, however, 16 torpedoers, ten river gunboats, twenty-one coast patrols and four training ships carried on the Navy list.

The original program decided upon provided that the first year was to be devoted to reorganize the present force and to place orders for second, third and fourth class cruisers. Improvements were to be planned after careful inspection of the naval bases in the Northern, Southern, Fukien and Kuangtung divisions, and the facilities of the naval schools at Tientsin, Nanking and in Fukien and Kuangtung were to be increased.

It was not until March this year that a definite program for building new warships was announced. On March 24th a contract was given Messrs. Vicker's Sons and Maxim, Burrow-in-Furness, for the construction of an armored cruiser of 2,400 tons, to cost £400,000. Then came the announcement that the first squadron to be built would consist of two cruisers, two defence vessels, two dispatch boats, four torpedo boat destroyers and six torpedoers. Peking has been visited by representatives of almost every large dockyard in the world seeking

a contract, but the order to the British firm is the only one officially announced.

In October, 1909, the announcement was made from Peking that the navy commissioners had decided that orders would be placed for one each of first class, second class and third class cruisers, two training ships, two torpedoers and one gunboat and would cover the expansion of naval strength for a period of four years.

In February this year, upon the return of the commissioners from their tour of the world, they presented a report of their observations to the Prince Regent and recommended that one of the essential steps towards successful reorganizaton was to send an ample number of students abroad for the necessary training so that as the navy was increased, competent officers would be available to handle it. This seems to have met with general endorsement by the Grand Councilors and the arrangement made by the commissioners while in Europe to send 100 students each to England, France, and Germany for naval training was concurred in. The report was also circulated from Peking that Prince Tsai Hsun had recommended that China's new navy should be modelled after the navies of Great Britain and Germany. This, however, is not conclusive as there is every reason to believe that, as in the reorganization of the army, the Japanese model will be followed generally.

Apparently the delay in placing orders for the construction of new vessels is due to the lack of funds available to carry out even the program for the first period. This program, it is estimated, will mean an expenditure of Tls. 18,000,000. Of this Tls. 1,500,000 goes to the construction of an Imperial Naval base at Hsiangshan and the balance to the construction of the first squadron which is to form the nucleus of the new navy. Divided into yearly allotments it means an annual outlay of Tls. 4,125,000. To this must be added Tls. 2,000,000 for maintenance. Every effort has been made to interest the viceroys and governors in providing the provincial share of this expense and it cannot be said that there is any more enthusiasm over raising the money for the naval appropriations than characterized the interest taken in securing military funds.

In September of last year when the circular note was sent to the different provinces asking for assistance, it is reported that comparatively few replies were received. An encouraging telegram from Hangchow was to the effect that the governor there had undertaken to raise Tls. 1,000,000 and added to this came the news that the provincial treasurer, salt comptroller, grain intendent and the police bureau had agreed to jointly contribute Tls. 230,000 annually. The Hangchow, Ningpo and Wenchow customs were also reported to have subscribed Tis. 20,000 for the same period.

In October, the Ministry of Finance advised the Throne that it was impossible to raise the Tls. 18,000,000, and reported that altogether with the maximum estimate of help expected from the provinces the Ministry was Tls. 2,000,000 short. A curtailment of the original program was suggested, but this was turned down. Subscriptions were encouraged from Chinese subjects residing in foreign countries with, it is reported, some success. It now appears, according to a later report, that while the viceroys and governors have pledged themselves to contribute their respective shares of the Tls. 18,000,000, only Tls. 500,000 have been remitted to the Ministry of Finance. The apparent failure to realize promptly the initial expenses of an extended naval program offers limited encouragement for the carrying out of the more expensive undertakings to follow if China is to have a modern navy. There is prospect, however, that the patriotism of the Chinese will be more deeply stirred as the pur-

PRINCE TSAI-HSUN'S VISIT TO THE VULCAN SHIPBUILDING WORKS AT STETTIN, GERMANY. GENERAL YIN CHANG, THE NEWLY APPOINTED WAR MINISTER FOR CHINA, IS AT THE PRINCE'S RIGHT IN THE LAST PICTURE

pose of the government is discussed and with a well defined purpose on the part of the Prince Regent to assume more and more control of provincial affairs including finance, there is hope for better results. The impression is gathered from many Chinese sources that the success in financing this project will be measured by the success met in establishing a central representative government for the Empire.

Commenting on this phase of the reorganization movement, the *Pall Mall Gazette* says: "It was not without substantial reason that the Chinese Naval Commissioners, who recently visited England and one or two other European lands, adopted a strictly non-committal attitude when asked if orders were shortly to be placed by China. They lacked the power of the purse. The naval mission on its return will find that, while the idea of a new and powerful Chinese navy still holds the popular imagination, the Ministers at Peking are hopelessly asking each other where the money for its construction is to come from." Indeed, it would seem that the *Gazette* was not far from the truth.

The reorganization of the Haichuan Naval Department which was in existence from some time before the war with Japan with its office at Tientsin is to be undertaken, and the office changed to Woosung or Shanghai. Other naval departments are to be established at Fukien, Canton, Kiangsu, and Chekiang. The viceroys and governors of these provinces will have the official title of Associate Naval Commissioners. The old dockyards at Foochow are to be extended and a central naval machine shop located at Tientsin. Regarding Chinese naval schools, provision has been made for the organization of these institutions in the different provinces from provincial funds. One school will be supported by Chihli, Shantung and Manchurian provinces and another by the provinces of Kiangsu, Chekiang, Fukien and Kuang. An academy and special schools are to be established by the Navy Department in Peking.

A Chinese student, being educated in Great Britain, writing for the *China Gazette*, expresses the opinion that there is little prospect for the New Navy or progress in other lines until a representative government is established at Peking and the Empire is more united in purpose. He is very pessimistic over the situation in China. He believes that despite all the pronouncements, edicts, declarations of reform, etc., that China is no better, if not worse, than she was at the time of the Boxer trouble. The finances have been going from bad to worse and the nation is getting deeper and deeper into debt every year and the people find it harder to make a livelihood. He places the cause of failure to the disorganization of the Government and the corruptions of the mandarins, all of which he terms a "rotten foundation" upon which to build any real and lasting structure of reformed government or administration. "China," he writes, "has had enough theorizing and preaching, and now she needs men to put their thoughtful words into active action. What China wants today is 'deeds, not words.'"

With reference to the organization of the navy he points to the necessity of this force to maintain the integrity of the empire and ensure not only its peace, but the protection of its commercial rights. He regards the expenditure as a very small insurance premium on the interests protected. He then proceeds to review the history of naval development throughout the world and especially of the relative value of the Chinese and Japanese navies previous to the war between the two countries, followed by the decadence of the former and the rapid growth of the latter after its close. The victory of the Japanese he ascribes to the fact that they gave every indication that they grasped the essential features of success at sea by providing modern equipment. They had rapid fire ordnance and their vessels had greater speed than the Chinese. On the other hand, the hopeless inefficiency and corruption and the general disorganization of the government, together with the out of date equipment of the fleet, brought to the Chinese terrible disaster.

The *Gazette* correspondent, however, places the importance of reform in the government before attempting the successful reorganization of army or navy. In closing a very strong presentation of China's present unhappy position, he says:

"Regarding the needs of a modern navy, such as building of ships, their designs as well as their special materials, dockyards, and stations, and the provisions which should be sufficiently made for their maintenance and upkeep, and for the training of men and officials to handle them, these are matters which require serious consideration, great experience, and special study. But above all there is the most difficult question of 'how to find the necessary funds' in order to commence this naval re-organization. This question can never be satisfactorily answered until a representative Government is established."

According to the *Navy League Annual* for 1909, the Chinese Navy's strength included but six protected cruisers and two torpedo gunboats as follows:

(1) Protected Cruisers.

Haichi (1898) 4,300 tons. I.H.P. 17,000 = 24 knots. Armament: 2 8-in q.f., 10 4.7-in. q.f., 22 small q.f. and 5 torpedo tubes. Coal capacity 300 tons.

Haishen (1898) and Hai-Yung (1897) 2,903 tons. I.H.P. 8,000 = 20 knots. Armament: 3 6-in. q.f., 8 4-in. q. f., 12 small q.f., and 3 torpedo tubes. Coal capacity 500 tons.

Nanting (1883), Nanshin (1884) and Hi-Ying (1889) 2,165 tons. I.H.P. 2,400 = 15.18 knots. Armament: 2 8-in. q.f., 8 4.7-in. q.f., 9 machine, and torpedo tube. Coal capacity 600 tons.

(2) Torpedo Gunboats.

Kien-Wei (1900) and Kien-Gnan (1899), 861 tons. I.H.P. 7,000 = 22.25 knots. Armament: 1 3.9-in. q.f., 9 small q.f., and 2 torpedo tubes. Coal capacity 360 tons.

Besides the above on the list may be found a training ship, a corvette and eight torpedo boats in the First Cruiser fleet and nine gunboats, a transport and two corvettes in the Second Yangtzekiang Fleet. The *China Tribune* publishes the following list:

THE FIRST CRUISER FLEET.

Class	*Name*	*Tonnage*	*Horse Power.*
Cruiser	Haich'i	4,300	17,000
Same	Haijung	2,950	7,500
Same	Haich'ou	2,950	7,500
Same	Haich'en	2,950	7,500
Training ship	Tungchi	1,900	1,600
Torpedo Gun Boat	Feiying	850	5,500
Corvette	Paomin	1,500	1,900
8 Torpedo Boats.			

THE SECOND YANGTZEKIANG FLEET.

Gun Boat	Chienan	571	7,000
Same	Chienwei	871	7,000
Corvette	Wanch'en	1,905	2,400
Same	Chingching	2,100	2,400
Gun Boat	Ts'etien	400	66
Transport	Tengleichou	1,285	152
Gun Boat	Chiangyuan	525	920
Same	Chianghsiang	525	920
Same	Chiangli	525	920
Same	Chiangchen	525	920
Same	Ch'utung	740	1,350
Same	Ch'uchien	750	1,350
Same	Ch'ukung	445	1,350
Same	Ch'ukuan	740	1,350

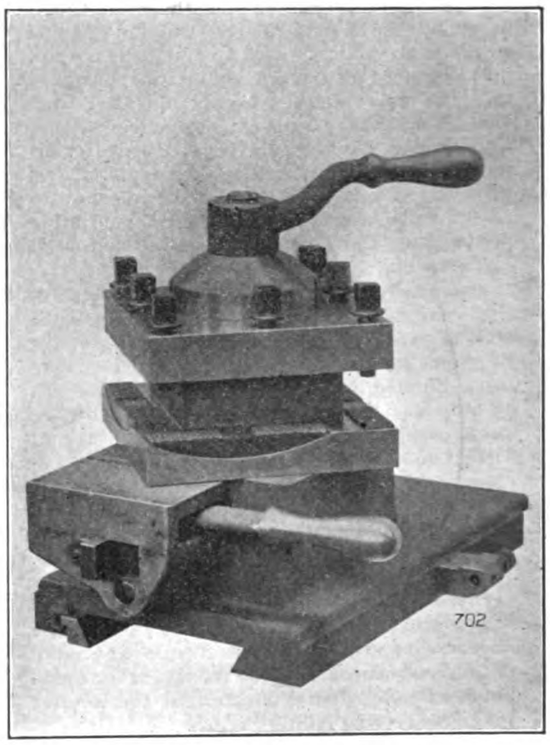
NEW TURRET TOOL POST

The Lodge & Shipley Machine Tool Company, Cincinnati, U. S. A., has recently designed a new turret tool post, illustrated in the accompanying half tone. This turret tool post is made for each size of Lodge & Shipley lathe and is a great time saver on certain jobs where the parts manufactured permit the use of several tools.

The principal features of this new design are that the tools can be set diagonally as well as square with the cross slide, thus giving eight positions of the turret; that each tool is clamped well forward of the center so as to give the firmest possible support; and that the clamping of the binder lever does not appreciably change the position of the tool.

The lower block of this attachment is interchangeable with the compound rest slide and is fitted to the carriage dove tail by taper gib. A vertical stud is secured in this base and passes up through the turret to carry the binder lever at its top.

The tool post is of steel. Each one of the four tools rests upon a serrated and hardened bolster or rocker, against which it is held by two hardened cap screws. By rocking the bolster in its curved seat, adjustment in the height of the point of the tool can easily be made. When the screws are tightened the position



NEW TURRET TOOL POST.

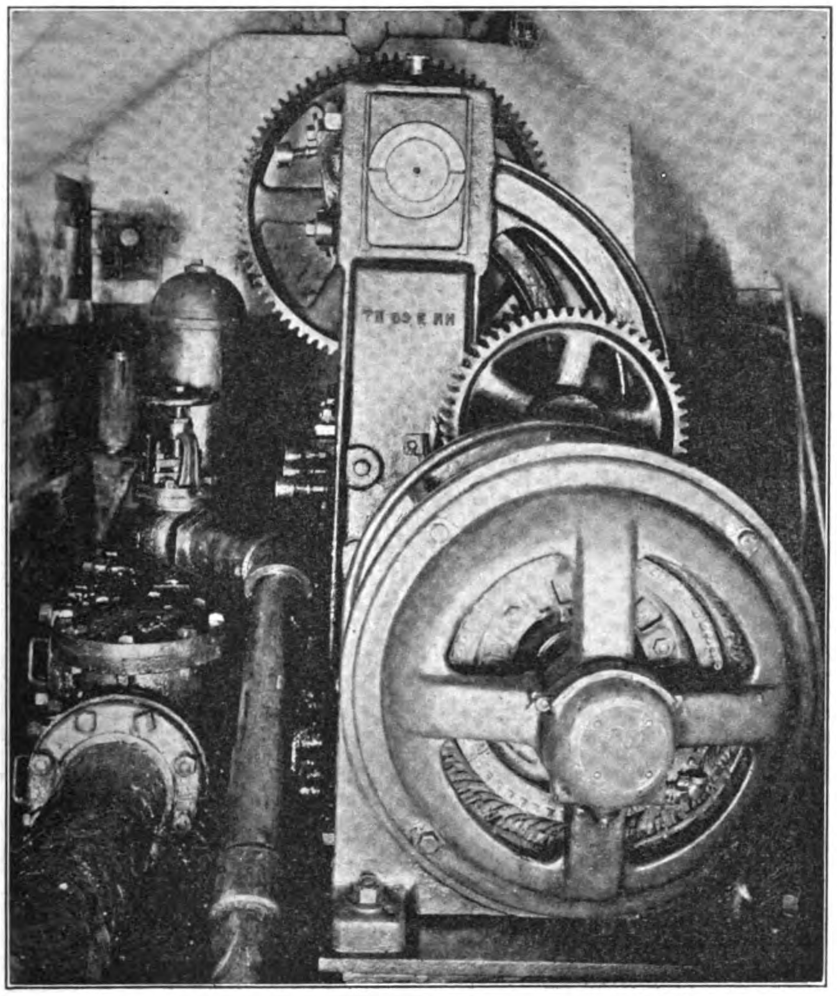
of the tool cannot change because before the bolster could slip, one or the other of the cap screws would have to be loosened to allow one of the bolster to rise.

The turret revolves on a taper bearing concentric with the vertical stud, but does not touch the stud. A bushing is slipped over the stud and this bush is tapered to fit the bearing of the turret. An adjusting nut is threaded to the stud and bears against the upper end of the taper bushing; by tightening this nut the bushing can be so pushed down that there will be no play in the bearing and yet the turret will revolve freely. The large collar between the binding lever and the turret covers the end of the taper bushing and its adjusting nut so that no chips can get into the bearing. The taper bearing is placed with large diameter at the top thus the turret is at all times held to the horizontal bearing against the lower block and when the binder is clamped the position of the turret and tools remains unchanged.

The turret is exactly located in any one of the eight positions by a locking bolt dropping into notches of an index ring. The locking bolt is withdrawn by the handle at the front of the lower block. Take-up for the bearing of the locking bolt is provided by a taper gib. A coil spring holds the locking bolt against the index ring so that it will at once drop into the notch when the proper point is reached. A screw shown in the illustration just beneath the end of the locking bolt provides adjustment for tension of this coil spring.

REMARKABLE PERFORMANCE OF INDUCTION MOTOR

The performance of apparatus under exceptional circumstances reveals the weak or strong points in its design, and its suitability for the service for which it has been installed. Due to the fact that reliable manufacturers design their apparatus with a large factor of safety, remarkable records are sometimes made.



20 HP. THREE PHASE, 220 VOLT INDUCTION MOTOR DRIVING PUMP IN MINES AT RICHMOND FURNACE, MASS., INSTALLED BY THE GENERAL ELECTRIC COMPANY.

A 20 H. P., 3 phase, 220 volt standard induction motor made by the General Electric Company recently demonstrated the ability of the standard motors manufactured by this company to operate successfully under the trying conditions met with in mines where the air is very damp, without their being totally inclosed. This is of great importance, as thorough ventilation of the motor is absolutely necessary due to the high temperatures which prevail in mines. This motor is geared to a mine pump, located at the bottom of the shaft at the mines of the Richmond Iron Works, Richmond Furnace, Mass., and is installed in a chamber where the air is always very damp and moisture is continually dripping from the roof timbers. It is protected from this water by a piece of tarred paper tacked above it, so as to conduct the water away.

During a heavy thaw last January the surface water broke in on one of the upper levels and flooded the mine. The water rose so rapidly that the electric pump was soon under water, the top of the motor being two feet below the surface. Under such circumstances it was imperative that the pump should continue in operation as long as possible, and so it was not shut down. It continued to operate perfectly and at the end of two hours, during the whole of which time the motor was submerged under water, it had pumped itself clear of water. It was then stopped only long enough to clean the dirt and chips from around the rotor and put oil in the bearings, and then was started up again. This pump has been running about 20 hours a day ever since and the motor has apparently suffered no injury from its unusual experience.

EXTENSION OF THE KOWLOON DOCKS OF THE HONGKONG & WHAMPOA DOCK COMPANY, LTD.

The enterprise of The Hongkong & Whampoa Dock, Co., Ltd., in keeping pace with the modern developments along shipbuilding lines, was recently demonstrated by the completion of the extension of their No. One Dock which increased the dimensions from 576 feet to 700 feet in length with a breadth at the entrance of 86 feet on top and 70 feet at the bottom and a depth of 30 feet over the sill at Ordinary Spring Tides. This extension provides for the accommodation of the largest vessels entering the Port of Hongkong and represents several years' activity in construction under most adverse conditions, the cutting being made from solid granite and involving the removal of one side of the hill at Kowloon to complete the work.

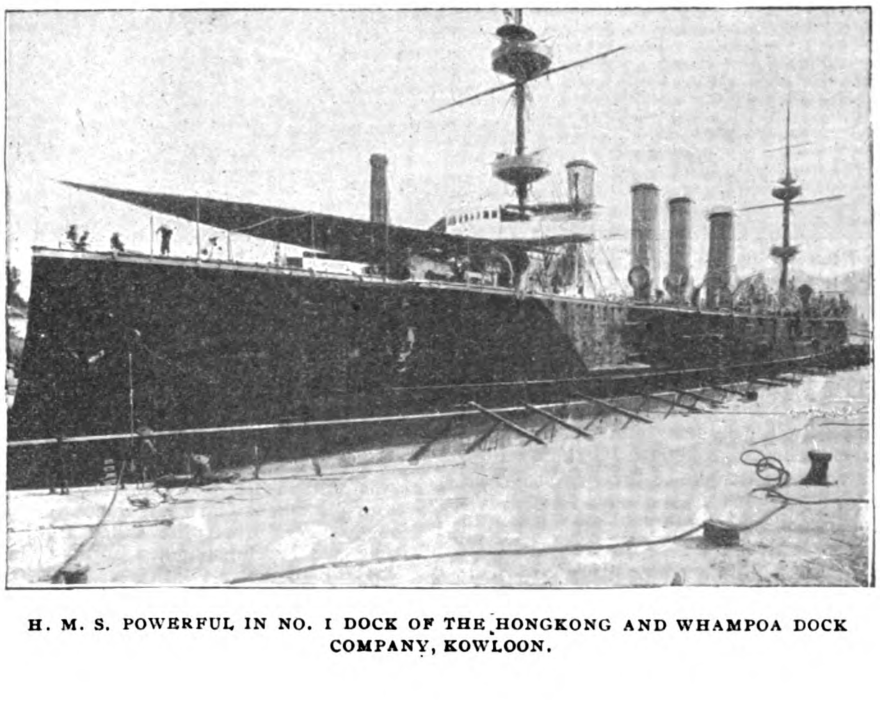
But the extension of the dock is not the only feature in increased activity that has characterized the policy of the present management. Other departments of industrial adventure have been added to meet the growing demands of the colony along general engineering and structural lines. The splendidly equipped Kowloon and Cosmopolitan Workshops have been receiving special attention and today in the Far East no more complete and up-to-date plant may be found for the undertaking of all classes of construction and general engineering, iron and steel forgings, iron, brass and bronze castings, and electrical work of all descriptions.

Particular reference should be made at this time to the railway supply department in which particular attention is being paid to the construction of railway passenger carriages. Indeed the Hongkong & Whampoa Dock Company, Ltd., has the distinction of undertaking the first contract for the construction of passenger carriages in the colony of Hongkong, which was placed with the company by the Kowloon-Canton Railway for the equipment of the British and Chinese sections, a large order and one that will no doubt be followed by many others from different parts of China as the railway building program progresses.

Another modern department of this company that furthers home industry in the colony is that devoted to the construction of main and auxiliary machinery and boilers for marine and land purposes. The advantages of these shops may be appreciated in view of the fact that the usual delay in procuring the above product from the home market is overcome and much time saved in addition to the advantage of more satisfactory service and facilities for prompt installation, etc.

At the several establishments involved in the extensive plant of the company the construction of steamboats, tugs, paddle and stern wheelers, launches, etc., comprise a large part of its operations and the general character of the output has brought the company an enviable reputation throughout the world. And in this department, the company keeps abreast of the times as may be gathered from the special attention paid to the construction of high speed motor boats for passenger and cargo traffic the demand for which has been steadily increasing during recent years.

With the opening of the railway to Canton the trade of the port will be given a marked impetus and with improved transportation facilities the docks will be in a better position than ever to participate in the colony's prosperity. The location of the extensive plant in the vicinity of the site for the general terminus at Kowloon and the introduction of sidings will place the Hongkong Whampoa Dock Co., Ltd., in a most desirable position to develop increased trade and serve its patrons with dispatch.



H. M. S. POWERFUL IN NO. I DOCK OF THE HONGKONG AND WHAMPOA DOCK COMPANY, KOWLOON.

CONTRACTING NEWS

CONTRACTS AWARDED.—Municipality of Shanghai.—Electrical Material.—The following is the announcement of the *Gazette*:

Of the tenders received for items 1-6 of Notification No. 2020, the lowest tender for the first five items, that of Messrs. Johnson & Phillips is accepted, for the sum of £2,035.2.6 c.i.f.

The lowest complete tender for item No. 6,900 High Candle Power Metallic Filament Lamps, is that of the Siemens Schuckertwerke for £241.5*s*, and acceptance is approved in accordance with the Engineer's recommendation.

The remaining tenders are as follows:—

(*a*) *Nos.* 1-5, *Tenders for Electric Cable, Junction Boxes, etc.*

	£		
Jardine, Matheson & Co.	2,190	19	6
Dodwell & Co.	2,287	17	6
Shanghai Electric & Asbestos Co.	2,415	10	8
Brighten, Malcolm & Co.	2,424	10	0
Inniss & Riddle	2,442	8	0
Collins & Co.	2,450	5	0
Von During, Wibel & Co.	2,534	1	4
Arnhold, Karberg & Co.	2,536	0	0
British Insulated & Helsby Cables	2,561	9	6
Siemens Schuckertwerke	2,672	13	4
W. T. Henley's Telegraph Works	2,707	10	0
Dickeson, Jones & Co.	2,726	15	0

(*b*) No. 6 *High Candle Power Metallic Filament Lamps.*

	£		
Arnhold, Karberg & Co.	245	0	0
Brighten, Malcolm & Co.	260	0	0
Dickeson, Jones & Co.	313	0	0
Jardine, Matheson & Co.	374	8	0
Dodwell & Co.	398	5	9
S'hai Electric & Asbestos Co.	401	6	0
Inniss & Riddle	407	0	0
Collins & Co.	508	10	0
British Insulated & Helsby Cables (part only)	148	0	0

FIRE-HOSE.—Of the tenders received for the annual supply of fire hose for the Fire Brigade in accordance with Notification No. 2028, it is decided, says the *Gazette*, upon the recommendation of the Chief Engineer, to accept the tender of Messrs. Shewan, Tomes & Co., £319, for hose manufactured by Messrs. Shand, Mason & Co., London The remaining tenderers were:

NAME.	MANUFACTURERS	2000 ft. *Rubber lined fire hose* £	*s. d.*	2025 *Cotton fire hose* £	*s. d*
Melchers & Co.	Lewall, Freiberg	114	0.0	58	8.0
Dodwell & Co.	—	150	0.0	60	10.0
Frazar & Co	Fleming, Birkby, etc	188	18.4	68	18.2
Collins & Co	do	189	0.0	70	0.0
China & Japan Trading Co	—	194	0.0	97	0.0
Arnhold, Karberg & Co	—	195	0.0	72	2.0
Melchers & Co	Meiswinkel, Essen	209	0.0	50	10.0
Rose, Downs and Thompson	—	221	8.0	62	8.0
Rose, Downs and Thompson	—	—		53	16.0
Andersen, Meyer & Co	—	242	0.0	119	15.0
Ilbert & Co	—	257	10.0	76	14.6
Evans & Co	Rob Roy	228	0.0	116	0.0
Westphal, King & Ramsay	Diamond Rubber Co. & Bentham Lanc	292	15.8	66	15.0
Inniss and Riddle	Geo. Angus & Co	336	0.0	91	10.0
Westphal, King & Ramsay	Diamond Rubber Co. & Bentham, Lanc	373	13.6	70	10.0
Dunlop Rubber Co	Dunlop Rubber Co	383	10.0	81	10.0
Dickeson, Jones & Co	—	390	0.0	85	1.0
Melchers & Co	Merryweather	434	0.0	134	16.0
Anderson, Meyer & Co	do.	455	0.0	145	10.0
Markt & Co., Ltd., (Shanghai)	Eureka	G.	$1,550	G.	$410
Fobes & Co	American Rubber Mfg. Co	Tls.	2,400	Tls	621
Shanghai Electric & Asbestos Co	Bowers Rubber Works		2,580		871
J. W. Gande & Co	Gorham Rubber Co		2,995		936
Chang Dah Yuen	—		3,000		350
Fearon, Daniel & Co	Gorham Rubber Co		3,030		845
Sam. McGregor & Co	Willcox & Co., etc	£275 0.0			
Jardine, Matheson & Co	N. Brit. Rubber Co	421 0.0			
Jardine, Matheson & Co	Merryweather	465 0.0			
Scott, Harding & Co	No. 1	Tls. 2,307			
Scott, Harding & Co	No. 2	2,379			
Scott, Harding & Co	No. 3	2,404			
Scott, Harding & Co	No. 4	2,543			
Scott, Harding & Co	No. 5	2,606			

BUREAU OF SUPPLY, MANILA.—40,000 barrels of cement.—Awarded Messrs. W. H. Anderson & Company, Green Island.—Bids published previously..

U. S. ENGINEER CORPS, U. S. A.—5,500 windows and doors for concrete buildings on Corregidor Fortifications.—Awarded the Cadwallader-Gibson Company. Approximately ₱45,000.

BUREAU OF PUBLIC WORKS.—Construction of bridge of reinforced concrete of two 80-foot spans over Tanjay River, Oriental Negros. Bids submitted, F. D. Harden, ₱29,470, and A. Luraschi, ₱23,700. These amounts do not include the supply of structural steel.

PROPOSALS INVITED.—Electricity Department, Municipality of Shanghai.—The Council is prepared to receive tenders for the supply and delivery of:—

(1) 5 miles 7-10 Standard wire gauge hard drawn bare copper cable.

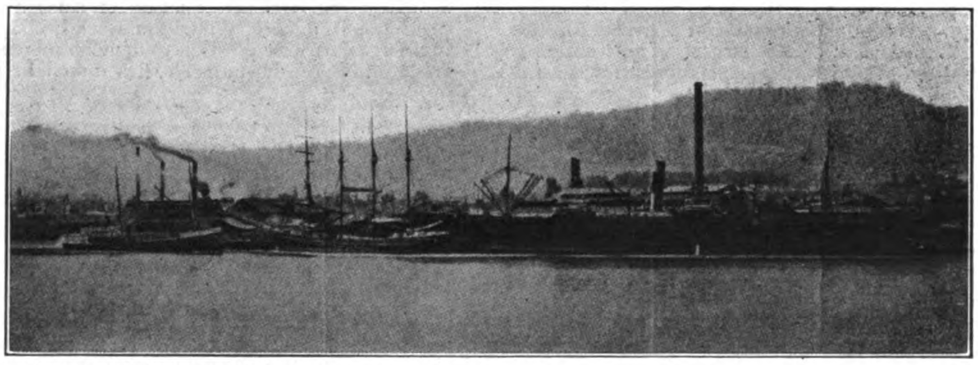
(2) 5 miles $\frac{4}{8}$ Standard wire gauge hard drawn bare copper cable.

(3) 1 mile 7-6 Standard wire gauge hard drawn bare copper cable.

(4) 1000 single pole, 50 ampere, 200 volt, house service fuse boxes.

Detailed specifications and further information may be obtained upon application to the Electrical Engineer, Mr. T. H. U. Aldridge, Electricity Works, Fearon Road. A charge of Tls. 5 will be made for specification which will be returned upon receipt of a bona fide tender.

Sealed tenders in duplicate will be received by the undersigned not later than noon on Wednesday, September 14, and should be marked "Tender for Electrical Material."



Reproduced from *The Timberland.*

BRITISH STEAMER "KNIGHT OF THE GARTER" RECEIVING CARGO AT THE EASTERN AND WESTERN LUMBER COMPANY.

LARGEST LUMBER CARGO EVER SET AFLOAT DISPATCHED TO CHINA

Undoubtedly the largest lumber cargo ever set afloat, was that carried from Portland on the British steamship Knight of the Garter, which cleared from this port June 9, says *The Timberland* of Portland, Oregon. The cargo consisted of 5,010,608 feet, and was supplied by the Eastern & Western Lumber Co., 3,546,215 feet; Clark & Wilson Lumber Co., 1,083,345 feet; Peninsula Lumber Co., 381,048 feet, the total being 5,010,608 feet. The cargo is consigned to Taku Bar and Shanghai, China. The Knight of the Garter is 475 feet long, 54 feet 10 inches beam, 33 feet 10 inches depth of hold. She was built in Glasgow, Scotland, in 1892, and has a displacement of 10,600 tons. She was drawing 25 feet when she sailed from Portland. The cargo was dispatched by the China Import & Export Lumber Co

PROPOSALS FOR FRESH VEGETABLES.—Headquarters Philippines Division, Office Chief Commissary, Manila. Sealed proposals in triplicate, subject to usual conditions, will be received at this office until 11 o'clock a. m., October 1, 1910, at which time and place they will be opened in the presence of attending bidders, for furnishing and delivering to the Subsistence Department, U. S. Army, Manila, P. I., such quantities of fresh potatoes and onions as may be required from time to time during period from November 1, 1910, to February 28, 1911. About 600,000 pounds potatoes and 120,000 pounds onions will be required per month. Each proposal must be accompanied with a sample of about ten pounds each of the potatoes and onions which it is proposed to furnish, also with a bidder's guaranty in the amount of $5,000.00 or with certified check for that amount on a bank of approved standing in Manila. The bidder to whom award is made will be required to give bond the penalty of which will be fixed by the Chief Commissary. Blank forms, specifications, and all necessary information can be obtained on application to this office. Envelopes containing proposals should be marked "Proposals for Fresh Vegetables

FAR EASTERN RAILWAY NEWS

INDO-CHINA RAILWAYS.—The *Saigon Opinion* is quoted as stating that the colony needs, first of all, drainage and irrigation as the most urgent railways have already been constructed, that the only line necessary at present would be one extending to the navigable stretch of the Mekong below Vientine, and that all future railway schemes should receive the most careful study before proceeding to construction. This comment had reference to the new loan of 200,000,000 francs for public works.

RAILWAY BRIDGES FOR SIAM.—The contract for the steel work of fifteen bridges for the Royal Siamese Railways has been placed with the Cleveland Bridge and Engineering Company of Darlington. These bridges are to be erected along the line of the Siamese section of the Peninsular Railway, included in the scheme proposed in the recent Anglo-Siamese treaty. The spans of these bridges will run from 30 to 250 meters and the contract covers the most important bridge construction.

to be opened October 1, 1910," and addressed to the under signed.—D. L. Brainard, Lieut. Col., D. C. G., U. S. Army, Chief Coms'ry.

BUREAU OF CONSTABULARY.—Office of the Chief Supply Officer.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., October 15, 1910, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary the following articles:

1,800 Mosquito bars.

3,000 Shoulder knots.

4,000 Water-proof capes and hoods, coats or ponchos.

Bids must be accompanied by samples.

Time for delivery to be stated on proposal and to be considered in awarding contract.

Samples of mosquito bars and shoulder knots may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

BUREAU OF PUBLIC WORKS, MANILA.—Cebu Water Works.—Sealed bids will be received by the Director of Public Works until 11:00 a. m., November 15, 1910, and thereupon opened, for the furnishing of material for and the construction of Osmeña Water Works System for the Municipality of Cebu, Cebu, Philippine Islands.

The proposed works will consist of a circular reinforced concrete dam with intake appurtenances and value chamber; a concrete spillway; a 4,000,000 gallon reservoir in excavation; a 14" and 16" main pipe line six and a half kilometers long; a distribution system 4" to 14" diameter pipe twenty-one (21) kilometer long; and the necessary gates, valves, valve boxes, fire hydrants, and appurtenances.

Specifications, general plans, and blank forms of proposal may be obtained at the office of the Director of Public Works, Manila, P. I., and from the office of the District Engineer, Cebu, P. I.

Each proposal must be accompanied by a certified check for 10% of the amount of the bid drawn by the bidder on a local bank and made payable to the Insular Treasurer as a guaranty that the bidder, if awarded the contract, will, after due notification, promptly enter into contract and furnish acceptable bond in the sum of twenty (20) per cent or a certified check for ten (10) per cent of the sum total of the contract price for the faithful performance of the work.

The right is reserved to reject any and all bids or waive informalities.

CLARENCE W. HUBBELL,
Acting Director of Public Works.

THE YELLOW RIVER BRIDGE AT TSINANFU.—The construction of this important bridge of the Tientsin-Pukow Railway is progressing very satisfactorily and it is expected that the work will be completed the latter part of next year. The contract was let to the Augsburg-Nurnberg Machine Manufacturing Company who have a contract covering 100 additional steel bridges of 60 tons each and in the development of the construction work electricity has been utilized most successfully. This large undertaking has involved a large expenditure for plant including transportation facilities and equipment for the manufacture of concrete piles which is one of the features of this construction. Some idea of the bridge may be gathered from the fact that there are twelve piers in all the three center ones supporting sections 128, 165 and 128 meters in length and the balance averaging 91 meter spans. The bridge will be 9.40 meters in width.

THE TAITO RAILWAY.—The Japanese Government has provided the sum of yen 4,250,000 for the early construction of the branch railway at this point.

NEW APPARATUS FOR DISINFECTING CARS.—The Consular Reports quote the Consular Agent of Sorau respecting a new process in vogue on the Prussian State Railways as follows:

"The former method of cleaning cars infected with vermin cost $85 per car, while by the new method whole railway trains can be cleaned in a few hours at a cost of $8.50 per carriage. The new apparatus consists of a steel tube laid parallel on the ground and having a diameter of 16 feet 4 inches and a length of 75 feet 4 inches. When a carriage is to be disinfected all doors and windows are opened and the carriage pushed into the apparatus. The tube is then closed and made air-tight and the air heated by means of steam pipes to 122° F. Then, as the temperature in the tube is constantly increased, the air is pumped out until the atmospheric pressure falls to 13¾ pounds per square inch. This draws all life from the vermin, also from the spawn under the cushions or behind the woodwork, and their death made absolutely certain. When it is desired to cleanse the carriage not only of vermin, but also of infectious germs, an evaporator filled with formalin is placed in the center of the tube."

SUPPLY OF RAILWAY MATERIALS FOR INDIA.—According to *Railways*, Messrs. Burn and Company, Limited, Howrah, recently booked for the Eastern Bengal State Railway, 40 girders, 30 feet and 40 feet spans and a terminal pontoon for the dredger *Alexandra*. Messrs. Ransomes and Rapier, Limited, Ipswich, have supplied the Assam-Bengal Railway with turning gear for cranes, manufactured at their Waterside Iron Works; and Messrs. Hayward, Tyler and Company, Limited, spare parts for a fire pump; and Messrs. Pooley and Sons, Limited, spare parts for weighbridges. Messrs. W. T. Avery, Limited, the well-known makers of weighing apparatus had an order for the supply of weighing machines. Messrs. Gillanders, Arbuthnot and Company, Calcutta, have the order of the East Indian Railway for the supply of 12,000 cwts. of round Padouk timber logs and 3,120 cwts. of square Padouk timber logs. This colonial timber is very suitable for railway carriage and wagon building.

Messrs. Jessop and Company, Limited, Calcutta, supplied a Tangye's duplex centre packed Ram type steam pump (20 inches by 8 inches by 10 inches) to the North-Western State Railway. Messrs. Gillanders Arbuthnot and Company have supplied the Eastern Bengal State Railway with 14,000 cwts. of Indian Teak Squares. The Engineer-in-Chief, Lower Ganges Bridge Project, Sara, has given a further order to Messrs. Burn and Company, Howrah, for the construction and supply of six 100-ton cargo boats. Messrs. Burn and Company have obtained an order to supply the South Indian Railway Company with fuur bridges. The East Indian Railway Company have placed with them the order for iron and steel work complete for two 30-ton gantries, including one winch for each gantry, for Mankatha station, Dinapore district. Messrs. Steel, Peech and Tozer, Limited, had an order from the South Indian Railway for the supply of steel axles for rolling stock, and Messrs. Taylor Brothers, Limited, had a large order for the supply of steel tyres for rolling stock. Messrs. Jas. Reid and Company, Limited, had a contract for the supply of pig-iron to this Railway. The Bengal Iron and Steel Company, Limited, we may mention casually, are manufacturers of large quantities of "Pig" at their Barakur Iron Works, and supply the East Indian Railway and also other Indian lines. Messrs. Lawrence, Scott and Company, Limited, Norwich, had an order for the supply of electric motors and cables to the East Indian Railway, Electrical Department. Mr. W. B. Peat, Receiver and Manager for the Debenture Holders of Messrs. Robert Stephenson and Company, Limited, Darlington, had a large order for the supply of spare or duplicate parts for locomotive engines to the East Indian Railway. The British Insulated and Helsby Cables, Limited, Prescot, Lancashire, have supplied a quantity of electric fittings to the same Railway. Messrs. Callenders Cable and Construction Company, Limited, had quite a large order for the supply to this line of insulated cable and bar wire. Messrs. Dorman Long and Company, Limited, the Middlesborough Structural Engineers, etc., have in hand the rolling of 5,563 tons of bull-headed steel rails, while the Patent Shaft and Axletree Company, Limited, had the order for the supply of the steel fishplates, and the Anderston Foundry Company, Limited, the steel fishbolts and nuts. Messrs. P. and W. Maclellan, Limited, Cannon Street, London, E. C., and Clutha Ironworks, Glasgow, are supplying the under-frames and other ironwork, etc., for 120 covered goods wagons to the East Indian Railway. The Gloucester Railway Carriage and Wagon Company, Limited, are supplying the same railway with the ironwork, etc., for two sheep vans, ten general service brake vans, and six mineral brake vans. Messrs. B. and S. Massey, Limited, Openshaw, Manchester, were supplying the Bengal-Nagpur Railway with a piston and rod for a two-ton steam hammer, and Messrs. Nasmyth, Wilson and Company, Limited, Bridgewater Foundry, Patricroft (near Manchester), a piston and rod for a ten-ton steam hammer. Messrs. Allen and Everett and Sons, Limited, have supplied the same railway with 2,172 brass boiler tubes for locomotive engines. The Patent Axlebox and Foundry Company, Limited, had an order for the supply of 8,500 axleboxes for rolling stock and the Monk Bridge steel and Iron Company, Limited, for the supply of 500 steel tyres for rolling stock. The Birmingham Railway Carriage and Wagon Company, Limited, have a large order for the supply of duplicate parts for carriage and wagon stock, and Messrs. Steel, Peech and Tozer, Limited, for the supply of 71 steel axles to the same railway.

KOREAN RAILWAY CONSTRUCTION.—Director Ohya of the Railway Bureau at Yongson states that the surveying work, both on the Honam and the Seoul-Wonson lines, was begun last April and is now in progress. On the latter line the survey has reached 30 miles from Seoul and of this, final location had been reported for a distance of over 20 miles or to Euichongpu and work is underway on the construction. Of the Honam line there are over 20 miles ready for the actual work. Little engineering difficulties are presented on this latter line, but the Seoul-Wonsan would pass through some difficult mountainous country. It is reported that the Antung-Kekwang section of the Antung-Mukden (50 miles) will be finished in November. Of the 34 miles of the Pongyang-Chinampo line 24 miles have been laid with steel and sixteen miles were operating and it is expected that the formal opening will take place in November. The Director announced that, by the end of the year 1912, it was expected that the lines of the peninsula and the Antung-Mukden would be completed and through service established between Mukden and Tokyo thus connecting Tokyo direct with Paris.

MONEY FOR THE TIENTSIN-PUKOW.—The President of the Board of Posts and Communications has advised that he will appropriate the necessary money from the profits of the Imperial Railways of North China to cover the cost of construction on the Northern Section until the supplementary loan may be arranged.

RUSSO-JAPANESE FREIGHT TRAFFIC TREATY.—Councillor Kinoshita, of the Japanese Railway Board, is at present in St. Petersburg attending the negotiations for the conclusion of freight agreement in connection with their respective railway interests.

RAILWAY FROM KALGAN TO JEHOL.—A Peking dispatch is to the effect that Tls. 3,000,000 have been raised by the Viceroy of Chihli and the Railway Board to defray the cost of this line.

KIANGSI RAILWAY.—The section of this railway, 16 miles between Kuikiang to Wanyiwan, was opened to traffic July 18.

MANILA-LOS BANOS RAILWAY.—This branch of the Manila Railway Company was opened to traffic on August 6th and now the run brings the residents of the capital within two hours of the famous medicinal springs. The construction of the main line southward through Batangas is progressing favorably.

THE BAGUIO RAILWAY.—Extensive surveys are under way for the purpose of locating a desirable line to connect Baguio with the Manila Railway Northern Trunk line. Several lines are being run from the west coast to the Summer capital and it is not improbable that an electric road will be installed.

EXPORT OF JAPANESE RAILWAY SLEEPERS.—During the last three years Japan has exported to China, Mexico, Hongkong, England, Canada and the United States over yen 13,000,000 worth of railway sleepers, and in 1909 the value was represented by about yen 9,000,000.

THE KOWLOON-CANTON RAILWAY.—It is expected that this line will be opened for traffic next month. Early this month the first locomotive passed over the section between Hunghom and Yaumati and the permanent way was declared complete to the frontier from Kowloon. The *China Mail* states that the purpose of opening the line at this stage has beed deemed advisable in order to work up the light local traffic, and to transport material for the Chinese section if required, all of which will help in earning revenue. For a time, however, the complete rolling stock will not be available. This is because of the delay in the supply from Home of the iron framework for the passenger cars, which was to have been delivered in the early part of the year but which as yet has not arrived in the Colony. The bodies of the cars have been built at the Hongkong and Whampoa Docks and are quite ready for the addition of the necessary iron-work. By reason of this delay it will not be possible for the proper cars to be used at the opening or for some time afterwards. Accordingly, ten four-wheeled covered goods wagons have been converted into temporary passenger coaches, eight being fitted as third class cars and the other two as first class. These will be in use until the other coaches are in readiness. These latter coaches will be of most approved style. They will number eight altogether and will be of what is known as the corridor bogey type, illuminated with electric light, and possessing every convenience. They will be of the following classes:—One First Clas to seat 32 passengers: one First and Second Classs, combined, to seat 24 First Class and 44 Second Class passengers: one Second Class, to seat 82 passengers: three Third Class, to seat 120 passengers each: one Third Class, Luggage and Brake, to seat 34 passengers: one Third class, Mail and Brake, to seat 28 passengers. The total weight on the rails of each coach will be 44 tons The goods wagons will number about 4 and will be of varying carrying capacity, ranging from 30 tons to 15 tons.

Altogether, says the *Mail*, there will be four locomotives used on the section, though the two smaller of these will not be available until the beginning of next year, as they are being used in construction work by Messrs. Leigh and Orange up to that time. The other two are magnificent types of engines, each having a total weight of 89 tons 15 cwt. They are six-wheeled coupled sidetank engines and will prove especially valuable for the peculiarities of the line over which they are to run, enabling the complete run through to be made without the necessity of stopping to take in water.

As to the Kowloon terminus, the present station near the Ferry wharf is purely a temporary one, as also is the one nearing completion at Hunghom. These are thought to be all that is necessary for the time, probably until the opening of the Chinese section. It was, in the early days, intended to have the terminal station on Kowloon Point, but the proposal of Mr. Lindsey, the present Chief Resident Engineer, to have it located at Hunghom has now received the approval of the Secretary of State. So in the course of time more substantial station buildings will be erected at Hunghom, which will serve the native population well and also be equally convenient for those residing on the Hongkong side, for a pier will be constructed adjoining the station and passengers will be conveyed across the harbor.

THE CHINCHOW-AIGUN RAILWAY.—According to Peking dispatches to the *Standard* China is willing to modify the original plans for the construction of this railway so that it will not proceed farther than Taonanfu and thus remove the proposal outside the zone of Russian contention with the understanding, however, that this modification must not be interpreted as a recognition of Russian claims. No official announcement has been made in support of this report as cabled.

F. M. S. RAILWAYS FOR 1909.—The total receipts for the year, according to the annual report, amount to $5,377,409, an increase of $119,510 over the previous year and exceeding the estimate by $157,409. The total amount expended including amount to capital account for railways during the year amounted to $7,469,342.

THE YUNNAN-KWEICHOW RAILWAY.—The Viceroy of Yunnan and the Governor of Kweichow have petitioned the Board of Communications for a foreign loan to construct a line between these two points and urge an early preliminary survey. These officials state in their petition that they do not believe it possible for the merchants of the provinces interested to raise the necessary funds.

INDIAN BRANCH RAILWAYS.—The Indian Government has provided new regulations covering the extension of the railway system and of the approval for guarantee of interest on new branches proposed:

(1) There will in future be no published list of approved projects, but any project may be submitted for approval at any time and will be considered at once upon its merits. (2) The interest which Government is prepared to guarantee upon approved projects is raised from 3 to 3½ per cent. (3) In the case of Company branch lines connecting with State worked lines, the Company will be allowed to annex the profits up to 5 per cent, instead, as heretofore, up to 3½ per cent, before dividing the surplus with Government. (4) In view of these concessions, a proviso is added that the terms for the construction and working of the proposed branch line by the main line administrations must be arranged in advance to the satisfaction of the Government of India. (5) Administration expenses during construction in the case of branch lines worked by the main line administration, may be charged as part of the working expenses to be met out of the percentage taken by the working agency until the 5 per cent is earned to the branch line company, instead of, as heretofore, until 3½ per cent has been earned. (6) A compulsory purchase clause is added, enabling Government to acquire a branch line on one year's notice at any time on the payment of twenty-five times average net earnings (excluding payments on account of guarantee or rebate) during the three preceding years or of 115 per cent of the capital expenditure on the line whichever is the greater. The ordinary purchase clause is also modified to make it that Government cannot acquire under it until thirty years have elapsed instead of as previously twenty years.

RAILWAY SUPPLY SHOPS AT YONGSAN.—Under the direction of the Railway Board of Korea, these shops are now engaged in turning out a large order for freight and passenger cars for the railways to supplement those ordered from the United States. There are now 28 cars including passenger and baggage and mail coaches and 100 freight cars being constructed at this factory, and it is expected they will be turned over to the authorities by the end of the year.

CARRIAGES FOR THE TIENTSIN-PUKOW RAILWAY.—The *China Critic* announces the arrival at Taku of two first class carriages which will be put on the service to Te Chow.

SOUTHERN SECTION TIENTSIN-PUKOW RAILWAY.—According to the correspondent of the Shanghai *Mercury*, 100 miles of this section should be completed by the end of the year. He reports that most of the bridges for 65 miles are completed and track laid for 45 miles. With the completion of a difficult cutting through the Pukow hills there will be 65 miles of continuous track. Two engines and 40 cars are engaged in construction work on the Pukow end. Progress is reported on the permanent bridge crossing the Sha-ho. The *Mercury* also publishes a description of the Pukow Railway shops which, under the direction of Mr. J. Alston, are equipped to keep the rolling stock in condition. At the present time the rolling stock includes ten main line engines consisting of two American locomotives manufactured by Baldwins and eight others manufactured by the North British Locomotive Company, Ltd. There are two ballasting and earthwork locomotives, American Baldwins, and four locomotives bought from Tungshan works for earthworks. There are also 100 highsided wagons, built by Hurst Neilson, Motherwell, and 50 low sided wagons built by the Midland Railway Carriage and Wagon Company, 50 low sided wagons built in Belgium and 50 covered goods wagons built in England. There are also:—100 Mud-Wagons, 80 low sided wagons and 20 flat wagons, built at Tungshan. The machine, fitting, smith and present erecting shops consist of four 42 feet spans 200 feet long. The locomotive store is of three 25 feet spans, 100 feet long. Foundry and Boiler House one span 42 feet by 200 feet long. Carriage shed one span 40 feet by 200 feet long.

The total length of the Southern section of the Tientsin Pukow Railway is 236½ miles. There are 200 bridges and 377 culverts. The length of bridging per mile—Lightest district—61.7 linear feet per mile; Heaviest district—96.3 linear feet per mile. Thus the average throughout is 74 linear feet per mile. Total amount of earth work is 3,430,000 fong, while the total amount of rockwork is 299,800 fong.

JAPANESE PRIVATE RAILWAYS.—The Railway Board reports the filing of applications by the promoters of 50 projects this year including 36 referring to the Kobe-Kyoto district.

MANILA RAILWAY BONDS.—An issue of ₱4,000,000 of government guaranteed bonds by the Manila Railway Company has been authorized by the Philippine government to cover the expenditure of construction of new lines.

OSAKA AND KOBE RAILWAY IMPROVEMENTS.—Plans have been submitted to the Railway Board involving the estimated expenditure of yen 8,000,000 for the rebuilding of the Osaka depot and the construction of an elevated railway through Kobe. Additional funds will be secured by the sale of land.

HONAN-TUNKWAN RAILWAY.—The survey of the first section of this line is reported complete and work has commenced from Loyang.

PHILIPPINE MINING NEWS

PARACALE MINING DISTRICT.—Reports from Paracale indicate that the present season will be marked by greater activity than ever. The unconfirmed report that the Paracale Gold Dredging Company's new dredge has been taking out about 200 ounces a week since operations began created quite a stir in Manila mining circles. Previous to the collapse of the old dredge, which was not adapted in every respect to the ground, the company made a record for a while of from 500 to 600 ounces a month. The new dredge is reported to save a greater percentage of the values and to meet conditions satisfactorily.

The Philippine Dredging Company has at least started its pioneer work with the Risdon dredge on the Malaiguit River and the first run of 18 hours is reported to have resulted in winning 15 ounces of the metal. If this is confirmed the company, after many discouragements, has entered upon a bright future. The ground where this dredge is working is reported to average very high values.

The Stanley Dredge suffered an accident in the breaking of a shaft this month, but reported 120 ounces as the result of three weeks work. The repairs will not entail much delay.

The Tumbago Mining Company was recently reorganized and the capitalization increased to $1,000,000 under the laws of the State of Nevada. This company is proceeding with development work.

THROUGH SLEEPER SERVICE TO EUROPE.—The *Japan Mail* announces that the International Sleeping Car and Express Trains Company and the East China Railway Company have arrived at an agreement that during ten years commencing on the 1st July (of the Julian calendar), 1910, the Sleeping Car Company shall make use of the Railway Company's carriages and wagons (twelve each of the first-class and second-class carriages, a dining-car, and five wagons), and that the changing of trains shall be conducted at Irkutsk. The connection with the Japanese railways being settled, through tickets will be issued on and after the 1st July (of the Julian calendar) this year at the principal stations in Japan.

JAPANESE RAILWAY RECEIPTS.—The June report gives yen 160,473 as the passenger receipts and yen 3,193,550 the revenue from freight for June, which is an increase in passenger traffic receipts of yen 201,285 and 164,000 for freight compared with June, 1909.

CANTON-AMOY RAILWAY.—The Army Advisory Board has recommended that this line be converted into a military line.

HAKODATE RAILWAYS.—In his report for 1909 Mr. Vice-Consul H. G. Partlett says: "The length of the railway lines in the Hokkaido at the end of 1909 was 645 miles and 7 chains (single track). During the year the following construction work was done: The track was doubled on the section between Zenibako and Iwamizawa, a distance of 36 miles and 49 chains. The construction work (embankments, bridges, culverts, etc.), on the Fukagawa-Rumoe section, a distance of 31 miles, was almost completed. The balance of the work will be carried out in 1910, and the line should be opened to traffic in the autumn of that year. The same will probably be the case with a section of 48 miles on the Ikeda-Abashiri line. On the Teshio line the work of construction was started in the autumn of 1909. It is also generally reported that a short line of rail will presently be laid between Hakodate and the cement works at Kamiiso, 7 miles or more down the bay. The survey of the route was completed at the close of the year. On the main island a short line of rail was opened in November connecting Aomori with some of the villages in the Imperial forest preserves lying on the western horn of the bay. The gauge is only 2 ft. 5 in., and traffic will be confined to the transport of lumber, for which purpose three Baldwin engines of 10 tons and a "Lima" engine have been purchased."

The Guamas Placer Mining Company completed its organization this month and capitalized at ₱500,000. The officers elected were: President, D. M. Carman; Vice-President, Francisco Ortigas; Treasurer, E. B. Soriano, and Secretary, G. C. Sellner. The directors are E. B. Soriano, A. Burlingame Johnson and Francisco Ortigas. All the stock has been subscribed. The property owned by this company is reported one of the richest in the Paracale District.

No announcement has been made with regard to the San Mauricio property or the operations of the mil.

Mr. Karl Swensen, instructor of geology in the Chinese university at Nanking, paid a visit to the Philippines last month and had an opportunity of examining the properties in Benguet and Paracale. He also made an examination of the Paracale Extension claims while in Paracale.

THE BENGUET MINING DISTRICT.—The Benguet Consolidated has been retimbering and cleaning up the dump since last writing and 72 ounces are reported. This plant is not operating to its fullest capacity on account of the progress of repairs covering the damage sustained last fall.

There is great activity on all the different properties in development work and visitors to Baguio are greeted by continual blasting throughout the mineral belt.

The Headquarters plant is on the ground and will be installed as soon as the expert arrives. The development work on the Headquarters group has shown very encouraging results.

The Major group is also a center of activity and preparations are being made to instal the plant ordered by the owners.

There is a movement on foot in the Benguet region to amalgamate all the different interests and it is said to be progressing favorably. The promoters believe that by centralizing the administration and establishing a large central plant the cost of production would be greatly reduced and tend to more effective development.

NUEVA ECIJA PLACER.—It is understood that representatives of American capital have become interested in a few options on the placer fields in this province and that tests have proven very satisfactory. There are about 2,000 acres involved in one group in which Judge A. D. Gibbs, M. A. Clarke, and Messrs. Squires Brothers are interested that is reported to be included in these options. These fields are an extension of the old placers at Gapan that have been worked for many years by antiquated methods. The properties recently staked incline towards the mountain regions of the east coast.

LEPANTO MINING NEWS.—The big copper at Mancayan is attracting some attention and we understand that the Lepanto Mining Company that holds the greater part of the territory under options have proceeded to reorganization and an increase of capital for the purpose of engaging in development work on a more extensive scale. British capital is said to be interested.

The Suyoc gold deposits lying near the Mancayan copper are said to warrant the expenditure to develop them. For years gold has been taken out of the placers, but no organized effort has been made to secure the largest measure of results for the outlay made by the different owners. Indeed it would appear that the Mancayan and Suyoc districts have suffered from lack of organized effort among the owners.

TAYABAS OIL FIELDS.—There is little to report in the way of development work. The drilling plant has been installed but the operations have been subjected to many delays. The owners of the property and the holding syndicate are sanguine of success.

BATAN COAL MINES.—The Bureau of Navigation has undertaken the construction of coal bunkers to have a capacity sufficient to meet the needs of the Insular Government. They will be located convenient to the mines and be equipped with the most modern appliances for loading and to have a capacity in this respect of handling 2,000 tons a day.

The Federal coal mines on Batan islands that were being developed by the U. S. Army have been shut down as a result of the unsatisfactory tests reported. It is the purpose of the Federal Government to later make a complete survey of the whole island to secure accurate data as to the formations there before anything further is attempted.

THE MASBATE DISTRICT.—We are informed that the Philippine Exploration Company has decided to forfeit its option on the Eastern properties. No official announcement has been made by the company as to the status of the property, but it is believed that the measure of development work did not warrant the purchase price named in the option.

PUBLICATIONS HAVING REFERENCE TO MINING IN THE PHILIPPINES.—In the recent review of mining in the Philippines by Mr. Warren D. Smith, Chief of the Division of Mines, Bureau of Science, the following list of references was published:

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1876. Centeno y Garcia José. Memoria geológico-minera de las Islas Filipinas. *Boletín de la Comisión del Mapa Geológico de España, Madrid* (1876), 3, (Copper, 221-226).

1881. Hernandez, Antonio. Report on copper in the district of Lepanto (in Spanish). *Revista Minera*, Madrid (1881), 2, 112-118.

1901. Becker, G. F. Report on the geology of the Philippine Islands. *U. S. G. S., 21st Ann. Rept.* (1901), pt. 3, 493-614.

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1905. Eveland, A. J. A preliminary reconnaissance of the Mancayan-Suyoc mineral region, Lepanto, P. I. Bull. No. 4, Mining Bureau, Manila (1905).

(A study of the geology of the region, with abstracts from earlier reports. A detailed map of the district on a scale of 1:4,800 is published as Bull. No. 5 of the Mining Bureau.)

McCaskey, H. D. Fifth annual report of the Mining Bureau for the year ending August 31, 1904. Manila (1905). (Copper, 29-30).

McCaskey, H. D. Sixth annual report of the Chief of the Mining Bureau for the year ended August 31, 1905. Manila (1905). (Copper, 16.)

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1907. Chase, T. Minerals in the Philippines *Eng. & Min. Journal* (1907), 83, 852-853.

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1886. Abella y Casariego, Enrique. Rápida descripción, física, geológica y minera de la Isla de Cebú. Madrid, Tello (1886). (Reference to galena, 146.)

1901. Becker, G. F. Report on the geology of the Philippine Islands. *U. S. G. S., 21st Ann. Rept.* (1901), pt. 3, 493-614. (Silver, 590-591.)

1905. McCaskey, H. D. Fifth annual report of the Mining Bureau for the year ending August 31, 1904. Manila (1905). (Lead and Silver, 30) 1907.

Goodman, M. Island of Marinduque. *Far Eastern Rev.* (1907) 3, 365-366.

Iron Deposits:

1903. McCaskey, H. D. Report on a geological reconnaissance of the iron region of Angat, Bulacan. Bull. No. 3. Mining Bureau, Manila (1903).

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC RAILWAYS, LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIP, ETC.

CHINESE TELEGRAPH LINES.—The proposed expenditure of Tls. 600,000 for the extension of the land lines in Shantung, Shansi, Honan and Kwangtung has been abandoned for the present on account of lack of funds.

BRENNAN'S MONORAIL IN ALASKA.—An American syndicate has undertaken the construction of a line 100 miles in length from the Matas-Matamiska coal fields towards Fairbanks within a year. It is estimated that the necessary track can be laid at a cost not to exceed $3,000 a mile. It is the purpose of the syndicate to extend its operations covering the different points in the territory should the operations prove satisfactory.

THE PERFECT ORIENTAL POSTMAN.—The *N. C. Daily News* publishes a copy of "Rules for Daily Conduct" issued by the Japanese Director of the Communication Bureau at Tokyo to the officers and employes of the Post, Telegraph and Telephone Exchange offices:

"(1) Work earnestly and soberly, with all your might. (2) Rely not upon to-morrow; without fail do to-day the work which should be done to-day. (3) In your daily intercourse be whole-hearted and free; do not fail in discharging all obligations toward friends; be careful not to be a trouble to other people. (4) Carefully observe all rules; be punctual; keep all promises; return borrowed money and other articles at the fixed time. (5) Forget not kind deeds; delay not to visit people who show favors, or write to them, or visit their graves after death. (6) Be kind to all; be sympathetic to those in trouble; be kind and helpful to the sick. (7) Always consider yourself as in limited circumstances; let it be a fixed principle to be simple and frugal; overcoming self and suppressing all passions, endeavour to save money. (8) Since life is the seed of all achievement, guard your health and keep a strong body. (9) Be careful of yourself even when alone; morning and evening turn your thoughts inward. (10) Frequently engage in innocent sports and seek to be happy in your daily life. Since the above ten rules should never be forgotten for a moment, let us together endeavour to put them into practice in our daily life and work."

JAPANESE ELECTRIC ENTERPRISE AT FUSAN.—A project is on foot promoted by Japanese capitalists to establish a company at this point for the purpose of operating an electric light and power plant and to operate an electric tramway.

INDO-CHINA WIRELESS.—The postal department of the colony has been authorized to establish stations at Saigon and Hanoi, each with sufficient radius to carry messages between the two points, a distance of approximately 950 miles.

TELEPHONE SERVICE FOR CHINKIANG.—The apparatus for the installation of an exchange has arrived at this city.

HONGKONG ELECTRIC TRAMWAY COMPANY REDUCES CAPITAL.—At the recent meeting in London the capital of this company was reduced from £325,000 to £81,250 so as to conform to the actual assets of the company. The name was changed from the Electric Traction Company of Hongkong to the Hongkong Tramway Company and it is expected with the elimination losses from unstable currency substantial dividends would be paid on this capitalization.

HYDRO-ELECTRIC AMALGAMATION.—The Tokyo press announces the amalgamation of the different interests holding concessions on the Kinugawa River. There are three principal concessions, but the Kinugawa and the Anglo-Japanese companies have agreed to amalgamate and leave the third concessionaire out. The completion of the amalgamation was expected concluded this month.

PACIFIC WIRELESS.—Consul Dreher, of Tahita, states in a report that former plans for developing the wireless system in the Southern Pacific having failed to develop, the governments of Australia and New Zealand have decided to establish a system of wireless telegraphy which will be under their control and which will embrace various groups of British islands, including Ocean, of the Gilbert group, where the Pacific Phosphate Company, of London, owns immense deposits of high-grade phosphates. The installation of that system may put an end to the plans of the Pacific Radio-Telegraph Company, and if so, Tahiti will have to look elsewhere for a connection with the telegraphic systems of the world. Such a connection could be made with the station of the United Wireless Company, of San Francisco, at Honolulu. Some successful experiments have already been made at Tahiti in receiving messages from the American Steamship Mariposa.

PHILIPPINE WIRELESS.—The committee representing the U. S. Army, U. S. Navy, and Insular Government are busy completing plans for the installation of a system that will not only place Manila in touch with every section of the archipelago, but establish communication with all the principal points along the coast of Eastern Asia. Thorough tests are being made of the different radii before the sites for the stations are selected by survey vessels operating in conjunction. The Government will also maintain portable equipment for emergency. These will be sent immediately to any point where response cannot be secured and may be utilized in army maneuver or for police duty in outlying districts. The surveys have not been completed, but work is being pressed so that there will be the minimum of delay in establishing the service.

TAXICABS IN SINGAPORE.—According to reports from Singapore an enterprising firm has introduced three taxicabs in that city and charges 40 cents Straits Cur. per mile divided into quarters.

PENANG INVENTOR OF ELECTRIC INSULATION.—According to the *Pinang Gazette*, Mr. O. V. Thomas, of the Penang Electricity Department, has not only invented a compound for the insulation of electric wiring, but has tested it for a year and found it has many advantages over other insulating compounds. It is believed to be a valuable substitute for rubber in the tropics, particularly for house installations by reason of its inherent qualities.

ELECTRIC LIGHT FOR KWANCHENGTSU.—The South Manchuria Railway has been approached by the Russian residents at this point with a view to securing a supply of electric lighting from the Japanese Electric Light plant at Chang-chun.

(History of the iron industry and account of reconnaissance with analysis of ores, 62 pp., 1 map.)

1905. Goodman, M. Report on the Bulacan iron industry. Sixth annual report of the Chief of the Mining Bureau, Manila (1905), 48-56.

(Contains estimates of the cost of production and annual output).

McCaskey, H. D. Fifth annual report of the Mining Bureau for the year ending August 31, 1904. Manila (1905). (Iron, 29.)

Publications having reference to gold mining in the Philippines:

1874. Minard. Sur les gisements d'or de Philippines. *Bull. Soc. Geol. de France* (1874), 2, 403-406.

1876. Centeno y Garcia, José. Memoria geológico-minera de las Islas Filipinas. *Boletin de la Comisión del Mapa Geológico de España.* Madrid (1876), 3 (Gold, 226-230).

1879. Abella y Casariego, Enrique. Memoria acerca de los criaderos auríferos del segundo distrito del departamento de Mindanao, Misamis. *Boletin de la Comisión del Mapa Geológico de España.* Madrid, Tello (1879), 49. 5 pls.

1883. Abella y Casariego, Enrique. Ligera reseña de la minería de las Islas Filipinas. Madrid, Tello (1883), 15 (Gold, 4-6).

1899. Day, D. T. Mineral resources of the Antilles, Hawaii, and the Philippines. *Eng. Mag.* (1899), 17, 242-251.

Hermann, R. Besuch im Golddistrict von Camarines Norte. *Globus*, Braunschweig, Vieweg (1899), 73, 11-12.

1901. Becker, G. F. Report on the geology of the Philippine Islands. *U. S. G. S., 21st Ann. Rep.* (1901), pt. III, 493-614 (Gold, 576-584).

Nichols, J. C. Notes on the Pigholugan and Pigtao gold region, Island of Mindanao. *Trans. Am. Inst. Min. Eng.* (1901), 31, 611-616.

(Describes occurrence of gold veins and placer deposits.)

1905. McCaskey, H. D. Fifth annual report of the Mining Bureau for the year ending August 31, 1904. Manila (1905).

(Gives summary of the mineral resources. Gold, 27-29.)

McCaskey, H. D. Sixth annual report of the Chief of the Mining Bureau for the year ended August 31, 1905. Manila (1905).

(Gives summary of developments of year, 16-17).

1906. Smith, W. D. Preliminary geological reconnaissance of the Loboo Mountains of Batangas Province. *Phil. Journal Sci.* (1906), 1, 617-631. 1 map.

(Study of geology of the region.)

1907. Chase, T. Minerals in the Philippines. *Eng. & Min. Journ.* (1907), 83, 852-853.

Eveland, A. J. Eastern Mining Company's Masbate workings. *Far Eastern Rev.* (1907), 3, 330-333.

(Detailed description by the superintendent, of the company's property and mining methods employed.)

Eveland, A. J. Notes on the geology and geography of the Baguio mineral district. *Phil. Journ. Sci. Sec. A.* (1907), 2, 207-233.

(A study of the general geology of the district with detailed map on scale of 1:24,000.)

Goodman, M. The Island of Marinduque. *Far Eastern Rev.* (1907), 3, 365-366.

(Notes on geology and gold prospects.)

Goodman, M. Metallic mineral resources. *Far Eastern Rev.* (1907), 4, 12.

(Summary of mining. Gold, 12-13).

1907. Goodman, M. Gold placers of Nueva Ecija. *Far Eastern Rev.* (1907), 4, 88.

(Notes on the geology and a description of operations.)

Goodman, M. History of placer mining in the Camarines. *Far Eastern Rev.* (1907), 4, 16.

(A short history of operations, with notes on the geology).

Ickis, H. M. Camarines gold fields. *Far Eastern Rev.* (1907), 4, 56-57.

(Notes on the geology and a description of operations.)

1908. Ferguson, H. G. The Aroroy Mining District, Masbate. *Far Eastern Rev.* (1908), 5, 56.

(Short summary of the geology and mining).

Goodman, M. Metallic mineral resources. *The Mineral Resources of the Philippine Islands.* Bureau of Science, Manila (1908), Gold, 22-23.

(Summary of mining work for the year 1907.)

Ickis, H. M. Mining and geologic notes on a portion of Northwestern Mindanao. *The Mineral Resources of the Philippine Islands.* Bureau of Science, Manila (1908), 28-31, with map.

Smith, W. D. Statistics of production. *The Mineral Resources of the Philippine Islands.* Bureau of Science, Manila (1908), 26.

Smith, W. D. Summary of the chief characteristics of Philippine ores. *The Mineral Resources of the Philippine Islands.* Bureau of Science, Manila, (1908), 33.

Besides the above papers, the FAR EASTERN REVIEW in its number for June, 1907 (vol. 4, No. 1), published reports of the operations of various mining companies, and during the past two years special correspondence relating to Philippine mining has appeared from time to time in the columns of the Mining and Scientific Press, (San Francisco) the Mining Journal (London), the Australian Mining Standard, the FAR EASTERN REVIEW, and the Philippines Free Press.

MANILA ELECTRIC COMPANY.—The *London and China Express* states that the shares of this corporation have been introduced on the London market at 62, but on demand rose to 64.5 The company, which was incorporated in 1903, has had a fairly successful career, 3 per cent. having been paid on the $5,000,000 of stock in issue for 1906 and 1907, while for 1908 and 1909 the rate was 4 per cent.

AEROPLANE TREATIES.—Washington and Mexico City are negotiating a treaty for the policing of the border with a view to preventing smuggling by means of aeroplanes.

AMERICAN MARINE WIRELESS ENFORCEMENT.—The law requiring the installation of wireless apparatus on every American vessel carrying a crew of fifty or passengers will go into effect July 1st, 1911.

UNDERGROUND TELEPHONE INSTALLATION AT PEKING.—The director of the telephone exchange at Peking has been instructed by the authorities to place all the wires of the system underground. The work will be started next month.

THE KEIHIN ELECTRIC RAILWAY COMPANY.—The profits for the half year amounted to 152,000 yen, out of which a dividend of 5% per annum was paid, yen 25,000 passed to reserve accounts; yen 10,000 expended in bonus to officials and yen 50,000 carried to next account.

VISAYAN ELECTRIC COMPANY.—The annual report of this company proved satisfactory to the shareholders and the following officers were elected: President, Mr. Albert Bryan; Vice-President, Mr. Martin M. Levering; Secretary, Mr. John Freeman; Mr. Albert Bryan temporarily acting. Members of Board of Directors, Mrs. Mary Bryan and Mr. Alfonso Z. Sy Cip.

JAPANESE ELECTRIC RAILWAYS.—Consul David F. Wilber tells of the opening of four new trolley lines in the Kobe district:

The four miles of the Kobe Electric Company's line (18 miles contemplated), opened in April, cost $1,500,000 gold. The dynamos, rails, poles, and air brakes are American, the running gear and machinery of cars English, and the wood work of cars and over head wires Japanese make. The fare is 4½ cents, and the earnings for the first two weeks averaged $850 per day, and expenses $230 per day.

The Minomo-Arima Electric Railway Company's 18-mile line to mountain summer resorts, opened on March 15, cost $2,000,000. The rails, dynamos, boilers, and running gear and machinery of cars are American, the woodwork of cars and overhead wires Japanese make. The fare is 19 cents, and the 30 cars are earning $940 per day.

The Keihan Electric Railway, 28 miles long, was opened on April 15, connecting the important cities of Osaka and Kyoto, and running through other large towns. The $3,500,000 capital was expended and a debt of $1,250,000 contracted. The materials nearly all came from England, though the overhead wires came from the United States, while the woodwork of the cars was made in Japan. The fare for the entire distance is 20 cents, and the daily earnings for the first two weeks averaged $1,500. The company's 30 cars, with an 8-minute schedule, will be supplemented by 20 cars with a 5-minute schedule. The Keishin Electric Railway, from Kyoto to Otsu, and the Uji Electric Railway, from Fushimi to Uji, now building, will connect with this line.

The Hyogo Electric Railway opened its first section—from Hyogo to Suma—on March 15; it will extend 12 miles along the shore of the Inland Sea to Akashi. The material has chiefly come from the United States, the woodwork of the cars and the overhead wires being made in Japan.

The new electric railways just opened having paralleled the track of the Government Steam Railway from Kyoto, through Osaka and Kobe, as far as Suma, on the Inland Sea, the authorities of the Imperial Government Railways, in order to meet the competition, have lowered the third-class fare for this section of the line to the same amount as that charged by the electric railway companies. They are also going to spend a large sum of money in track improvement and will put on more and faster trains. This will cause greater danger and inconvenience at the level crossings in Kobe, and the Western Railway Administration Bureau will make the line through the city an elevated one.

PUBLIC WORKS, DOCKS, BUILDINGS, ETC.

THE DAIREN WATERWORKS.—The announcement is made that, notwithstanding the delay attending the installation of the reservoir at Fushimidai, the city of Dairen may look for its completion next month and the water will be laid on at once.

WATER SUPPLY FOR THURSDAY ISLAND.—It is proposed by the Australian government to expend the sum of £10,000 in improving the water supply of this port in view of its increasing importance as a port of call.

THE MATTHEWS-DAVIDSON HARBOR SCHEME FOR MELBOURNE.—Two new piers have been recommended and a new dock and pier near the Victoria. The expenditure will total £873,000, of which £408,000 will be spent on the new pier, 105,000 dredging channels and £360,000 on the Victoria dock piers.

GOVERNMENT WORKS AT TAIHOKU.—Consul S. C. Reat, of Tamsui, states that the Japanese feel that they have fashioned and constructed a capital city for Formosa that far surpasses in architectural elegance the majority of cities in the Far East. The improvements under the direction of the Department of Public Works include the harnessing of the mountain streams to supply light and power and the pumping of water from the mountains by an excellent system of supply. The new government buildings numbering 20 show solidarity and compactness and the expenditure is believed by Mr. Reat to be justified, although they cost $2,867,495 gold. The new Government offices proposed built in the next five years will cost about $1,245,000 gold.

NEW PIER AT HOGART.—Consul Henry Baker writes that a new pier 700 feet long, 100 feet wide with a minimum depth of 36 feet alongside has been completed at this port at a cost of £26,000. On the pier is a shed 500 feet long by 44 feet wide.

THE NEW PARLIAMENT BUILDINGS AT TOKYO.—The committee in charge of the plans for the construction of this group of buildings at Tokyo has reported on a site covering an area of 150 acres for the buildings and an appropriate park which, with the buildings, are estimated to cost in the vicinity of yen 17,000,000. The buildings will include the 238 rooms with accommodation for 450 members. Besides the two houses the Horse Administration Bureau, the Chinese legation and the official residence of the Prime Minister will be included.

THE MONSTER BRIDGE OVER THE AMUR.—When the bridge over this river is completed at Khabarovsk, it will be the one of the largest structures of its kind in the world. Its length is 7,658 feet, divided into 22 spans ranging from 100 feet to 284 feet.

ZAMBOANGA FRANCHISE MUST BE ADVERTISED.—The application for a franchise by a local Zamboanga company to instal a gravity water supply and electric light and power plant has been acted upon by the Governor-General. He has decided that proposals should be invited and the franchise be given to the most satisfactory tender.

ILOILO RIVER NAVIGABLE.—As a result of the recent dredging vessels of 4,000 tons have proceeded up the river to the godowns for sugar and other cargo securing dispatch with great expedition.

NEW MANILA THEATER.—The Majestic is the name of a modern theater constructed on Calle Iris at a cost of ₱70,000.

NORMAL SCHOOL FOR MANILA.—The site of the new Normal school has been chosen on the new boulevard known as Taft Ave. It will be a three storey structure built of reinforced concrete with a frontage of 100 meters on the avenue and 70 meters on a new street to be laid out. It will have the shape of an L and of Spanish renaissance design.

PHILIPPINE IRRIGATION WORKS.—The committee recently approved the preliminary plans for the development of a gigantic system including 340,000 hectares of agricultural lands and involving seven provinces near Manila. The scope of the system may be gathered when it is realized that it embraces all the countryside included in the valleys between the west and east coast ranges as far north as the boundaries of Pangasinan. It will also entail the control of all the rivers of that region that are tributary to the Rio Grande.

PANAMA CANAL LOCKS.—The most gigantic engineering features of the Panama Canal will be the great locks to be located at three different points, ten at Gatun, six at Pedro Miguel and seven at Milaflores. The largest of these will be eighty-two feet high, and all will be sixty five feet wide. Bids were opened at the Isthmian Canal Commission, Washington on June 14th for furnishing the material and building these locks, which will require about 60,000 tons of steel. The lowest bid was submitted by the McClintock-Marshall Construction Company of Pittsburg for $5,374,474. The United States Steel Products Export Company submitted two bids at $6,100,000 and $6,200,000. The bid of the Maryland Steel Company was $8,409,368, and of the Riter-Conley Manufacturing Company of Pittsburg $10,183,257.

YANGTSZE DEFENCES.—Peking is considering the request of the Viceroy of the Liangkiang for activity on the part of the Board of War in the repair and strengthening of the defences at the strategical points along this river. The Viceroy announces that he is ready to supply the funds necessary.

THE TA CHING BANK BUILDING.—This new Shanghai building is now occupied. It is a four storey structure with a frontage of 240 feet on Hankow Road and a depth of 75 feet. The bank occupies the first floor and the second and third floors are set aside for offices. It is of massive construction with red brick facing. The architects were Messrs. Atkinson & Dallas. Two elevators are installed and were supplied by Messrs. Scott, Harding & Co. representing Messrs. A. Smith & Steven, manufacturers. The doors of the strong rooms of the bank were supplied by Messrs. Jardine, Matheson & Co., agents for Messrs. Chubb & Sons,; Messrs. Ilbert & Co. supplied the tiles, etc., and Messrs. Scott, Harding & Co., the plate and other glass. The hot and cold water installation was made by Messrs. Howarth, Erskine, Ltd.

LIAO RIVER DREDGING.—Provision has been made by the Peking Government for the expenditure of Tls. 500,000 during the next five years. A tax will be levied on vessels covering three-fifths of that amount and the balance will be supplied by the Federal Government.

PUBLIC WORKS IN JAVA.—Mr. Consul J. W. Stewart in his report for 1909 states that much needed improvement to the harbor at Sourabaya are being carried out. The river is being widened and dredged with a view to relieving the congestion of lighter traffic and a much larger scheme involving the construction of a harbor with wharves alongside which ocean-going vessels can load and discharge is under consideration, and will, in due course, be reported upon by two experts who have been sent out from the Netherlands for the purpose. Dredging operations on the bar at the western entrance to Sourabaya harbor have resulted in a gain of about 2 ft. of water and vessels drawing from 19 to 21 ft. can now use this entrance. Supplies have been voted by the Government for the carrying out of harbor improvements on a large scale at Samarang. The proposed improvements include the lengthening of the breakwaters, the construction of a harbor for lighters, and of a subsidiary canal with customs wharves and warehouses for the accommodation of imported goods, leaving the present canal free for outward traffic.

SHIPBUILDING, MERCHANT MARINE AND FISHERIES

FUSAN-BAKAN S. S. LINE.—It is the purpose of the Japanese Railway Board to add two new steamers of 3,000 tons each to meet the demand for traffic carrying when the Antung-Mukden Railway is completed. The orders will be placed with the Mitsu Bishi and the Kawasaki Docks.

PACIFIC MAIL S. S. CO.—At the recent meeting of the stockholders of the Pacific Mail W. G. Rockefeller was elected director to succeed to the vacancy made by the death of the late E. H. Harriman and Mr. M. D. Schiff succeeded W. V. S. Thorne.

THE SHANGHAI DOCK AND ENGINEERING COMPANY, LTD.—The statement for the year shows an increase in gross earnings of Tls. 230,-569.20 and the increase in net earnings Tls. 120,406.50 compared with the previous year. At the annual meeting the chairman said "taking into consideration the scarcity of work and the keen competition for it, we consider these increases very satisfactory."

REDUCED CHARGES AT DAIREN.—It is understood that a reduced scale of charges for stevedoring and wharfage will go into effect at an early date. This with the compulsory pilot system free of charge are among the innovations at this port.

NEW JAPANESE CRUISER IN COMMISSION.—The second class cruiser Tone, constructed at the Sasebo dockyard, after her speed trials has been placed in commission. Her displacement is 4,035 tons and her speed 23 knots. Her armament consists of two 6-inch guns, twelve 4.7 inch guns and two-twelve pound.

WEIR COMPANY'S NEW VESSELS.—The Leceric and the Oteric, 11,000 tons, fitted for passenger service, recently launched from the Clyde, will soon be added to the trans-Pacific trade for this company.

THE NEW ENGINEERING AND SHIPBUILDING WORKS, SHANGHAI.—The Tung Tsi, a light draft steamer and one of two ordered for Northern Service, was launched from the above works last month. The vessels are 150 feet long and 25 feet in length and are equipped with engines of diagonal compound type with locomotive marine boilers. This company has been very active this season having orders for ten steel lighters, several tenders and much repair work.

THE TOYO KISEN KAISHA.—It was unanimously agreed at a recent meeting of the Board of Directors to pay 7.50 a share on the 130,000 shares issued and that the balance be paid in instalments to wipe off pressing indebtedness and to pay in part for the new vessel of the *Tenyo Maru* type recently ordered at the Mitsu Bishi Dockyards.

MEXICO MARU LAUNCHED.—This vessel ordered by the Osaka Shosen Kaisha for its trans-Pacific service was successfully launched from the Mitsu Bishi Dockyards last month. She has a displacement of 6,000 tons and is the most modern vessel equipped as a freight steamer designed for this trade.

NEW YORK-MANILA LINE ADVOCATED.—Vice-Consul Chester Davis, in a recent report from Colombo, directs attention to the fact that this year the exports from Ceylon to the United States will reach $13,000,000 gold and of the imports the United States supplies but $1,000,-000. He advocates a direct line of steamers from New York to Manila calling at Aden, Colombo, Singapore and Hongkong and points to the great development of Ceylon through direct connection with Great Britain as evidence of the assistance such a line would prove in the development of Manila and the Philippines.

SHIRE LINE INNOVATIONS.—Advices have been received that this line has reduced the sailing time between London and the Far East to 45 days and reduced rates of ₱350 from Hongkong to London and ₱330 to Marseilles have been announced.

PIER CHARGES AT MANILA.—The Insular Collector of Customs has issued the following circular:

"Every vessel coming to a pier shall pay a pier charge of one centavo per gross ton per twenty-four hours or for any part thereof, exceeding six hours; Provided, that the charge for twenty-four hours to any vessel shall not exceed one hundred and fifty pesos (₱150), and Provided Further, that when any vessel which has entered the Port of Manila on its outward voyage and discharged cargo at a pier, enters this port again on its inward voyage, the pier charge shall be one-half the regular charge."

THE HONGKONG, CANTON, MACAO S. S. CO., LTD.—The profit for the year including $20,-766.39 carried forward from former account amounted to $143,526.21.

THE OSAKA SHOSEN KAISHA.—This company recently declared a dividend of 6% for the half year.

JAPAN'S NAVAL PROGRAM.—According to the *Japan Mail* the program outlined is confined to the following:

"The projected expansion shall be carried out as soon as practicable in accordance with the minimum naval defence scheme formulated by the authorities. 2. The said expansion shall be carried out within the limit of neither violating the non-loan policy of the present Cabinet nor obstructing work on urgent undertakings. 3. The financial resources for the purpose shall be obtained from surplus revenue. 4. The principle of manufacturing warships in Japan shall be adhered to for the time being, so as to avoid the outflow of specie and practice economy as much as possible, and accordingly no extraordinary item, such as expenditure for the fourth expansion shall be made in the Budget. 5. The terms to the already established schemes shall not be altered. In the next fiscal year, therefore, a sum from Yen 15,000,000 to Yen 20,000,000 is to be added to the expenditure already allotted, and with this money the principle of large ships and large guns is to be adhered to."

MINES, MINERALS AND THE METAL TRADE

F. M. S. TIN RETURNS.—The returns for June show an output of 11,085 piculs.

KOREAN GOLD PRODUCTION.—The value of gold produced from the Sakju and Changsong mines in July is reported to have reached yen 219,000.

THE IWAKI CEMENT COMPANY.—This organization has decided to reduce its capital from yen 1,000,000 to yen 850,000. The net profits for the term amounted to yen 4,762.

THE KUANTAN TIN COMPANY.—The report for the year showed a profit of $6,787 and gave the information that the deposits would be worked out in another year. The company has $30,000 on fixed deposit, $10,600 on current account with tin in transit. If the company went into liquidation, it would give the shareholders approximately $4 a share.

STRAITS TRADING COMPANY, LTD.—The half yearly report of this company shows a net profit for the term of $519,370, out of which a dividend of 15% was paid.

AMERICAN MACHINERY FOR BORNEO.—Consul General Du Bois, of Singapore, directs attention to the supply of 800 tons of machinery and 400 tons of iron frame work shipped from the United States to Borneo for installation on a jelatong plantation. The work of the American factory was so perfect that after a voyage of 12,000 miles it was successfully installed without the slightest adjustment.

RAUB GOLD OUTPUT.—The output for the four weeks ended July 20th amounted to 1,446 ounces.

THE MENGLEMBU LODE SYNDICATE, LTD.—The meeting called for the purpose of discussing a resolution providing for the increase of capital to $500,000, no action was taken in view of an offer to purchase having been made in the interval following the notice of meeting.

THE FUSHUN MINE CONTROVERSY.—The Chinese authorities have reduced their demands to a request that the Chinese owner be reimbursed to the amount of yen 220,000 and the Japanese police be withdrawn.

THE CANTON CEMENT WORKS.—Vice Consul Meyers gives the following description of the Government works at Canton:

"The entire plant consists of the factory, a dwelling for the manager, several large offices, and dwellings for the laborers, all resting upon piles in a fork of the Pearl River, the factory being constructed of steel frames. The plant has eight kilns, and a capacity of 500 casks, of 400 pounds each, per day, but the present output is only 250 casks. A 600 horse-power engine and several small motor engines supply the motive power, and a small electric plant furnishes the light for the factories and office buildings. Attached to the works is a shop for the manufacture of the casks, which cost 24 cents each. The machinery for the entire plant was purchased in Germany. The plant has cost the Government about $1,122,000, which amount has been taken from the education fund, to be returned from the profits of the works. The workmen number 250, whose wage is 14 cents per day and quarters. The only foreigner employed is a German chemical engineer.

The rock used in the manufacture of the cement is found about 80 miles from the works, is a pure limestone, and well suited for cement purposes, yet the output is not uniform, but this is attributed to the variable qualities of the coal used. Although little of the product has been put on the market, there is no reason why these works can not produce cement of first-class quality and at prices as low as that produced by its competitors. Of the 12,000 casks sold, 2,000 were used in Canton, 2,000 were shipped to North China, and 8,000 went to Manila.

THE SHELL TRANSPORT AND TRADING COMPANY, LTD.—At the annual meeting of this company special reference was made to the new petroleum concession in Sarawak and the necessity of providing for £500,000 to develop it by erecting a refinery, pipe line, etc. Besides the Borneo concession rich strikes have been reported on the holdings of the company in Java and Sumatra and the directors' report contains the information that if the present plans of the company mature, it will control an output of 3,000,000 tons of crude oil annually within another year. For the purpose of financing the extensive operations, an additional £1,000,-000 were required and the increase of the capital stock of the company to £3,500,000 was decided upon immediately in an extraordinary meeting following the adjournment of the general meeting of the shareholders.

THE DUFF DEVELOPMENT.—The report of this company shows an output of 2,060 ounces of gold for the half year against 4,674 ounces for the corresponding term 1909.

THE COWIE HARBOR COAL COMPANY.—The following report was submitted by the chairman at the annual meeting recently held in London as a result of a visit to the mines. The company has arranged a scheme which would give a storage up to 2,000 tons at Sandakan, which would provide sufficient coal at all times for vessels calling without having to telegraph ahead.

"The conclusion he had arrived at was that the mine would be a great success, and for this they had the backing of facts. First, they had some 20,000,000 tons of coal proved. With normal freights they had a very ready market. The coal was very much liked by everybody. They had got a first-rate and a very confident staff. He asked the engineer of the boat on which he went out to Hongkong whether he thought the coal was sufficiently good to use on the Norddeutscher Lloyd big boats, and he said he was quite sure of it. Their output was increasing, and by the end of the

year the manager expected to be putting out 200 tons a day. The output to-day was from 130 to 135 tons a day. When they were producing 125 tons a day they were making a profit. They had reached that point when their cost of putting on board ship was lower than the lowest figure that had been paid for the coal, and this was the most important feature of the whole lot. If they were producing at a point lower than they had ever sold at, it only required an increased output to make a very nice profit. (Applause.) Anyway, he was satisfied. He had come back not only sanguine, but quite sure of success. And he was only echoing the opinion of every man out there who had had anything to do with the colliery at all."

F. M. S. MINING REPORT FOR 1909.—This report places the tin output at 818,888 piculs compared with 816,789 in 1906, 183,119 laborers being employed, while in 1906 there were 212,660 in 1906. The average price in 1909 was $68.00, Straits Cur., against $89.60 in 1906. The total area alienated for mining purposes amounted to 281,076 acres. The Senior Warden is doubtful of the prospects of the tin mining industry owing to the labor problem as 28,000 laborers have left the mines for other more desirable pursuits. Reference is made to the discovery of a bed of coal at Rawang in Selangor as promising results. The gold won during the year amounted to 16,243.6 ounces, of which Perak furnished 1,279; Negri Sembilan, 77, and Pahang 14,887.6.

AMERICAN OIL DUMPED IN INDIA.—An exchange reports that, while the Burma dealers were raising their prices following the new petroleum tax, an American syndicate dumped 1,000,000 gallons on the Calcutta market and, as the exchange states, "upset the Burma applecart."

COAL DEPOT AT BREMERTON.—The U. S. Naval authorities have decided to increase facilities for coal storage at the Naval station to 200,000 tons. The estimated cost of the depot proposed is placed at $2,000,000 gold.

STRIKE AT THE TRONOH TIN MINES.—The *Penang Gazette* reports a strike at Tronoh of an extensive order some of the ground producing 90 catties per cubic yard.

FINANCIAL, COMMERCIAL AND MISCELLANEOUS

THE TRADE OF BANGKOK.—The total value of imports for the fiscal year amounted to Ticals 69,811,711 and the exports Ticals 102,570,434. Of the exports the largest volume is in rice and teak and of imported manufactured goods, cotton leads. There is a falling off in the import of cotton and an increase in the export of rice for the year.

CHINESE PUBLIC INSTRUCTION.—The president of the board of education has presented estimates for Tls. 1,600,000 to the board of finance for educational work for the coming year.

COTTON GROWING IN BRITISH NORTH BORNEO.—The report of the directors of the British North Borneo Company refers to the adaptability of the colony to the growing of tree cotton. During the year 40 tons were exported from Tuaran and the product was favorably reported on in Hongkong and Japan. A large area is adapted to the cultivation of this product and encouragement is being given the industry.

THE TANSAN MINERAL WATER COMPANY.—This company has been organized in London with a capital of £50,000 for the purpose of acquiring the sole and exclusive control of the right of importation, distribution and sale throughout Great Britain and the continent of the Japanese mineral water of that name.

SHANGHAI FINANCIAL SITUATION.—The Imperial Edict, authorizing the Shanghai Taotai to borrow Tls. 3,500,000 from the foreign banks to assist the local market, has relieved the situation that had assumed serious proportions as native bank after bank suspended payment. In addition to this loan, arrangements were made to supplement it by native contribution of Tls. 1,500,000 in order to cover any risks. It is believed that the recent experience of the native banks will result in an adjustment of methods of carrying on business so as to prevent a recurrence.

THE RESTORATION OF TAKU.—The conditions under which the British Government proposes to restore Taku to China provide that the Chinese agree to build no more fortresses or arsenals there and that it will not be utilized as a naval base.

SHANGHAI MUNICIPAL REVENUE.—The total, according to the *Gazette*, for June amounted to Tls. 214,700.59 as against Tls. 172,825.28 for the corresponding month, 1909. The total for the half year 1910 amounted to Tls. 1,251,525.51 while the estimate for the year amounted to Tls. 2,575,350.

MALAY AND FOREIGN CONTRACT SYNDICATE, LTD.—This company has been registered with a capital of £30,000, of 29,850 shares ordinary at £1 each and 3,000 founders 1*s*. each.

ANOTHER RUBBER FLOTATION.—The Pulau Bulang Rubber and Produce Co., Ltd. has been floated with a capital of $5,000,000 in $10 shares, of which the present issue is $4,670,000.

RUBBER CURING FACTORY.—The Planters' Stores and Agency Co., Ltd., propose establishing a factory at Kuala Lumpur equipped with modern machinery for the purpose of handling the product of the small planters. Three large creping and washing machines will be installed and the motive power provided by a 45 h. p. oil engine.

PHILIPPINE IMMIGRATION.—The number of foreigners arriving in the Philippines during the year ended June 30th, numbered 9,532, of whom 6,772 were Chinese; 772, Japanese; 579, Spanish; 586, British; 181 Germans; 201 Indian and the balance scattering.

BIG RUBBER DIVIDEND.—The Federated (Selangor) Rubber Co. will pay a dividend of 125% after only five years life.

MONGOLIAN PROTECTION SOCIETY.—Many Princes and Dukes in Peking are interested in the formation of a Mongolian Protection Society and several large contributions have been made to its treasury.

PHILIPPINE WOOD FOR LATE EMPEROR'S MAUSOLEUM.—A contract was entered into by the Export and Import Lumber Company of Manila through its president, Mr. W. Payne, to supply over 50,000 feet of Philippine walnut, narra and lumbayo to the Chinese Government available in September. The framing timbers of the mausoleum will be of walnut selected from the giant trees of Mindanao, some of which have a diameter of 45 inches, are 60 feet in length and a weight of 17 tons. The narra and lumbayo will be utilized for interior finishing, etc. Philippine lumbermen are greatly encouraged over this contract and look forward to many orders of a similar character from China.

TIEHLING FLOUR MILLS.—A report from Tiehling is to the effect that the management of the Tiehling Mill is negotiating with the Russian Flour Mill Company at Kwangchengtzu for the purchase of the latter plant with a view to increasing the capacity to 500 bags daily.

THE CHINA MUTUAL LIFE INSURANCE CO., LTD.—According to the recent annual report the assets of this company now stand at $8,415,250, an increase during the year of $1,300,760.00. New applications were received during the year amounting to $13,632,247 being an increase over the previous year of $1,306,427. Of these, policies were issued to the amount of $11,986,645 and applications amounting to $1,645,602 were postponed or declined. The total insurance in force March 31st, 1910, amounted to $37,855,885. The total income for the year amounted to $3,566,559, an increase over the previous year of $492,724.

CHINESE PRESS ASSOCIATION.—The editors and proprietors of Chinese newspaper, published in Shanghai propose the organization of a press association with a view to advancing the interests of constitutional government and to abolish the distinction between Manchus and Chinese. Journalists employed on Government or revolutionary papers will be excluded.

ENCOURAGING THE ART OF PACKING.—Osaka has arranged for an exhibition in October at which the main feature will be a competition in the art of packing. All packers throughout the empire are being invited to attend.

SAN FRANCISCO'S UNRIVALLED HOTEL

The completion of the new extension to the St. Francis Hotel gives San Francisco one of the largest and best appointed hostleries in the world. Ever since it was opened in 1905, it has been famous for the beauty of its appointments and the excellence of its accommodations; and the additions increase the capacity of the house nearly fifty per cent, making possible many improvements and novel features. During and after the great disaster of 1906 the St. Francis was the only large hotel in San Francisco that was able to keep running. Its location facing Union Square, in the heart of the theater, shopping and club district, is unrivalled; while the architecture is so arranged that a majority of the rooms have a magnificent prospect. Under the management of Mr. James Woods the hotel has become famous around the world, and it is now prepared to accommodate its ever increasing patronage.

*LONDON, ENGLAND, METAL MARKET

The following are (Friday, July 1) prices ¶ of metals:—

COPPER.

COPPER.	£	s.	d.		£	s.	d
*Tough cake and Ingot	59	0	0	..	60	0	0
*Best Selected	59	0	0	..	60	0	0
*Electrolytic	60	0	0	..	60	10	0
*Sheets and sheathing	69	0	0	..	—		
*Flat bottoms	72	0	0	..	—		
STANDARD †Cash	54	10	0	..	54	12	6
STANDARD †Three Months	55	5	0	..	55	7	6
*Copper tubes, seamless per lb.	0	0	8½	..	—		
*Lake	62	0	0	..	63	0	0

* Less 3½ per cent. † Net.

ALLOYS.

BRASS: Wire	0	0	6⅛	..	—
,, Tubes (solid drawn)	0	0	6⅛	..	—
,, Sheets	0	0	6⅛	..	—

TIN.

English ingots, f. o. b.	148	0	0	..	149	0	0
,, bars	149	0	0	..	150	0	0
,, refined	150	0	0	..	151	0	0
Straits... Cash	149	10	0	..	149	15	0
Straits... Three months	150	7	6	..	150	12	6
Australian spot	—			..	—		
Banka (in Holland) Cash	150	13	9	..	—		
Banka (in Holland) Three months	150	6	3	..	—		

LEAD.

Spanish or soft foreign	12	11	3	..	12	18	9
English pig, common	12	15	0	..	12	17	6
,, L. B.	13	7	6	..	—		
,, sheet and bar lead	14	7	6	..	—		
,, pipe	14	17	6	..	—		
,, red	16	0	0	..	—		
,, white	18	0	0	..	—		
,, patent shot	16	0	0	..	—		

SPELTER.

Silesian ordinary brands	22	2	6	..	22	5	0
,, special brands	22	15	0	..	23	0	0
English Swansea	22	15	0	..	23	5	0
Sheet zinc	25	10	0	..	—		

ANTIMONY.

Antimony	27	0	0	..	29	0	0
,, Crude	12	10	0	..	13	10	0
,, Ore (basis 50%)	8	0	0	..	10	0	0

QUICKSILVER.

Flasks, 75 lbs. warrants	8	15	0	..	—

ALUMINIUM.	Per ton.				Per ton.		
98-99 per cent	72	10	0	..	75	10	0

NICKEL.	Per ton.				Per ton.		
98-99 per cent. guaranteed	167	10	0	..	171	0	0

PLATINUM.

Per oz. Troy, 130s.; nominal and subject to negotiation.

*Mining Journal.

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, August 5, 1910.

STOCK.	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND.	Approximate Yield per cent per annum at Present Quotation	CLOSING QUOTATIONS
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	120,000	$125	$125	g £1,500,000 s $15,500,000 i $250,000	$2,028,988	31-12-09	£2. 5/- for half year ending 31-12-09, @ ex 1/9½ = $25.11	5%	950 buyers £89 10s.
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	c £4,0'9 $400,000	$34,167	31-12-09	$2 (London 3/6) for 1903	....	$76 buyers
MARINE INSURANCES.											
Canton Insurance Office, Ld.	1881	$2,5[illegible]0,000	10,000	$250	$50	$1,560,000 j $254,583 u $302,799	Nil.	31-12-08	$10 for 1908	6%	$172½ sellers
North China Insurance Co., Ld.	1903	£150,000	10,000	£15	£5	g £125,000 s Tls. 22",000 u Tls. 335,253 f Tls. 146,586	Tls. 207,572	30-6-09	Final of 7/6 making 15/- for 1908.	5%	Tls. 115 buyers
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	s $3,000,000 g £90,000 f $287,984 j $1,449,735 u $713,985	$287,984	31-12-09	Final of $20 per share, making in all $50 per share for 1908, and an int. div. of $30 per share for 1909	6%	$850 sellers
Yangtsze Ins. Association, Ld.	1889	$1,200,000	12,000	$100	$60	$1,000,000 j $294,405 $199,234	$707,637	31-12-08	$12 for year ending 31-12-08 and interim of $3 on account of 1909	7	$205 sales
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 z $550,348 f $61,168	$438,406	31-12-09	$6 and bonus $2 for 1908	7%	$112 sales
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,460,000	$426,218	31-12-09	$27 for 1908	8%	$350 sellers
SHIPPING.											
China & Manila Steamship Co., Ld.	1882	$750,000	1) 30,000	$25	$25	i $57,734	Dr. $3,777	31-12-09	$4% for 1906	....	$7 sellers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$230,000 i $100,589	Nil.	30-6-09	$2½ for year ending 30-6-1908	....	$28 sellers
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	e $250,000 d. i. $627,500 f $103,545 $ 19,106	$20,766	31-12-09	Final of $1½ for 1909	8%	$32½ sellers
Indo-China Steam Navigation Co., Ld. (Preferred) Do. Do. (Deferred)	1882	m £600,000	2) 60,000 2) 60,000	£5	£5	i £138,100	£7,537	31-12-09	No dividend paid for last two yrs.	....	$65 sellers
"Shell" Transport & Trading Co., Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£720,000 i £100,000	£192,994	31-12-08	3rd interim of 2/- per share (coupon No. 12) making in all 4/- for 1908, and interim of 1/- for account 1909	5%	94/- buyers £11 buyers
"Star" Ferry Co., Ld.	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$71,850 i $62,681	$1,159	30-4-10	A dividend of 7% and bonus of 5% making 12% for year ending 30.4.1901	5 4½	$24 sellers $13 sellers
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	e $520,000 r $83,620	Dr. $8,090	31-12-09	$10 per share for 1909	6%	$167
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	Dr. $101,851	31-12-09	$3 for 1897	—	$26 sellers
Perak Sugar Cultivation Co., Ld.	—	Tls. 350,000	7,000	Tls. 50	Tls. 50	Tls. 100,000	Tls. 6,302	31-8-09	Tls. 10 for year ending 31-8-09	....	Tls. 800 sales
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	d £215,000 h £84,390	£1,435	28-2-09	Final of 1/6 making 3/- for 09	9%	Tls. 16 sellers
Headwaters Mining Co.	1908	₱600,000	28) 600,000	₱10	₱10				First year		₱10 buyers
Raub Australian Gold Mining Co., Ld.	1892	£200,000	150,000 50,000	£1 £1	18-10 £1	£4,873	Dr.	..	1/2 per share, 13th div.	5%	$7½ buyers
Oriental Consolidated Mining Co. Ld.	...	g $5,000,000	500,000	g $10	$10	none	....	..	Final of gold $0.65 for 1909 in all g $15	..	41/-
DOCKS, WHARVES AND GODOWNS.											
Fenwick (Geo.), & Co., Ld.	1889	$450,000	s 18,000	$25	$25	$25,275	Dr $8,460	31-12-09	$1¾ for year ending 31-12-06	....	$10
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$3,000,000	60,000	$50	$50	$550,000 t $31,993 s $40,000	$264,847	31-12-09	$2½ for 1909	4½%	$54 buyers
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	i $88,412 v $221,000	$132,765	31-12-09	Interim of $1½ for account 1909	..	$50 buyers
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	Tls. 6,261	30-4-09	Final of Tls. 3½ making Tls. 6 in all for 1909/10	6¼	Tls. 77 sellers
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	36,000	Tls. 100	Tls. 100	b Tls. 697,257 r Tls. 70,000 e Tls. 125,000	Tls. 9,222	31-12-09	Final of Tls. 4 making Tls. 7 for 1909	7	Tls. 118 sellers
LANDS, HOTELS AND BUILDINGS.											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 25,000	Tls. 4,314	29-2-09	Tls. 6 for year ending 29-2-10	5¾	Tls. 97 sellers
Central Stores, Ld.	—	$751,845	16) 50,123	$15	$15	n. $1,000	$1,000	31-12-08	8% for 1909	—	$16 buyers
Hongkong Hotel Co., Ld.	1866	$600,000 $400,000	12,000 8,000	$50 $50	$50 $25	$648,975 r $10,000	$1,277	31-12-09	$2.60 on old shares, $1.30 on new shares, for ½ year ending 31-12-09	—	$104 buyers $82 sellers
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	$27,971	31-12-09	Interim of 3½ for 1910	6½	$98½ ex div. sales
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $226,945 20) $25,856	$5,471	31-12-09	45 cents for 1909	5¾%	$8½ sellers
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$269	31-12-09	$2½ for 1909	8½%	$32 sales
Shanghai Land Investment Co., Ld.	1888	Tls. 3,900,000	78,000	Tls. 50	Tls. 50	Tls. 1,523,045 e Tls. 300,000	Tls. 63,969	31-12-09	Interim of Tls. 3 for 1910	6¾	Tls. 112
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,958	31-10-09	Interim of $1.80 for 1910	8¾	$39
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 250,000 Tls. 40,098	Tls. 10,991	31-10-09	Tls. 11 for year ended 31-10-09	8½	Tls. 120 sellers
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	e $20,000	$26,297	30-7-09	50 cents for year ending 31-7-08	8%	$5

FAR EASTERN STOCKS AND QUOTATIONS—(Continued.)

STOCK.	WHEN ESTABLISHED	CAPITAL.	NO. OF SHARES.	VALUE.	PAID UP.	RESERVE	AT WORKING ACCOUNT.	DATE.	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.	CLOSING QUOTATIONS
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 175,000	Tls. 8,372	30-9-09	Tls. 7½ for year end. 30-9-09 (10%)	12%	Tls. 62
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	8,000	Tls. 100	Tls. 100	none	Tls. 4,829	31-12-08	Tls. 6 for 1909	%	Tls. 68½
Soy Chee Cotton Spinning Co., Ld	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	Tls. 31,172	Tls. 31,173		Tls. 25 for 1909	10%	Tls. 240
MISCELLANEOUS.											
Ball's Asbestos Eastern Agency, Ld.	1895	£5,377.10s.	11) 8,604	12/6	12/6	£1,500	£682	31-12-08	15% for 1908		$8 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	$40,000	Nil.	31-12-08	5% for 1909	6%	$9½ sellers
China Light & Power Co., Ld. Do. do. Special Shares	1901 1907	$300,000	50,000 17) 50,000	$5 $1	$5 $1	none	$46,483	31-7-09	60 cents for year ending 28-2-06		$140 sellers
China Provident Loan & Mortgage Co., Ld.	1898	a $1,250,000	7) 125,000	$10	$10	$100,000	$2.602	31-12-09	80 cents for 1909	9%	$8¼ sellers
Dairy Farm Co., Ld.	1896	$300,000	40,000	$7½	$6	l $10,000 $10,000	$1,850	31-7-09	$1.20 for year ending 31-7-09	6½%	$19½
Green Island Cement Co., Ld.	1897	$4,000,000	400,000	$10	$10	$14,000	$4,290	31-12-09	Final of 40 cts. making in all 75 cts. per share for 1909	10	$6¼ sellers
H. Price & Co, Ld	1907	$120,000	19) 15.000	$10	$10	none	$1,923.87	31-12-09	14% viz $1.40 for 1909	12%	12
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$11,798	28-2-10	A dividend of $1.20 per share and a bonus of 10 cents	6	19½ buyers
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	$25	k $150,000	$12,662	31-12-09	Final of $8 per share making in all $10 1909	6	$135 buyers
Hongkong Rope Manufacturing Co., Ld.	1883	$600,000	$60,000	$10	$10	$40,000	$9,176	31-12-09	Final of $1 making in all $2 for 1909	9	$21 buyers
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	25,000	Glds. 100	Glds. 100	Tls. 547,500 f Tls. 63,914 21 Tls. 547,500	Tls. 316,682	31-10-08	Interim of Tls. 25 for 1910	5	Tls. 1400 sellers
Peak Tramways Co., Ld. Do. (New)	1907	$750.000	25,000 50,000	$10 $10	$10 $1	$20,000	$3,014	30-4-10	80 cents on fully paid shares & 8 cents on $1 paid shares for year ending 30-4-10	5¼ 5	$14 sellers $1½ buyers
Philippine Co., Ld.	1904	$750,000	75,000	$10	$10	none	Ps. 18,640	31-12-08	None	....	$10
Robinson Piano Co., Ltd.	1900	$200,000	22) 4 000	$50	$50	$5,000	$61,138	31-8-08	6% for ½ year ending 30.9.07	....	$50 sellers
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 w Tls. 75,000	Tls. 5,250	31-10-08	Final of Tls. 5 making Tls. 8 for 1908	2	Tls. 165 sellers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	Dr. $31,096	31-8-09	None	....	$26 sales
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	$127,86	31-5-09	50 cents for year ending 30-5-10	8	$5½ sales
Union Waterboat Co., Ltd.	1905	$500,000	15) 50,000	$10	$10	w $11,956	..	31-12-08	60 cents for year-end. 31-12-1908	6¼	$7½ buyers
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$46,000	$342	31-5-09	60 cents per ordinary share for year ending 31-5-09	5	$11½ sellers
Watkins, Ltd.	1899	$100,000	10,000	$10	10	none	$19,41	31-12-09	3½ for 1909	11%	$2¾ buyers
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	e) d $300,000 $25,000	$1,776	31-12-09	3% for 1909	—	$7 sales
Weismann Limited	1904	$30.000	3,000	$10	$10	$12,250	$67	31-7-09	10 per cent for year endg. 31.7.08.	10%	$10 buyers
William Powell, Ld.	1901	$105,000	15,000	$7	$7	none	$782	30-6-09	Final of 30 cents making 80 cents year ending June 30th 1906	....	$2¼ sellers
Societe des Pulpes et Papeteries du Tonkin		660,000	13,200	50 Haiphong	25 Currency	....	..	....	First year	....	$29 (Hk.Cy.)
RUBBERS											
Allagar Rubber Estates, Ltd.	1909	£85,000	29) 750,000	2/-	2/-	....	....	....	....	....	6/6
Anglo-Malay Rubber Co., Ltd.	1905	£150 000	1.500,000	2/-	2/-	....	....	....	80% for year ending 31.12.09	....	26/-
Balgownie Rubber Estate, Ltd.	1905	†† $200,000	‡‡ 20,000	†† $1	†† $1	$7,400	$11,205	31-3-09	100% for year ending 31.3.10	....	$17 [Singapore]
Castlefield Rub. Ld., [fully pd.].	1906	£35,000	27) 32,650	£1	£1	none	....		....	....	122/6
Damansara (Selangor) Rub. Co.	1906	£110,000	25 110,000	£1	£1	nil.	£2,220	31-12-08	50% for 1909	....	175/-
Golconda Malay Rubber Co.	1907	£80,000	26 80,000	£1	£1	nil.	nil.	....	25% for 1909	....	127/6
Highland & Lnd. Para R. Co. Do. Do. [fully paid] Do. Do. [partly paid]	1906	£310,000	=181,454 123,546	£1 £1	£1 15/-	£8,784	....	....	35% for 1909	....	120/-
Kamuning (Perak) Rb. & Tin Co. do do A Shares do do B Shares	1909	£200,000	950,000 105,000	2/- £1	1/- £1	nil.	nil.	....	....	....	7/- prem.
Kuala Lumpur Rubber Co., Ltd.	1906	£180.000	180.000	£1	£1	£4,000	1,82	....	30% for 1909	....	195/-
Linggi Plantations, Ltd. (ord.) Do. Do. (7% pref.)	1895 Reconst	£100,000	×900,000 10,000	2/- £1	2/- £1	....	....	....	50 interim	....	56/- Nominal
Ledbury Rubber Estates Ltd. Do. Do. (contrib.)	1908	£125,000	§§ 60.000 §§ 40.000	£1 £1	£1 7/6	....	....	....	17½% for 1909	....	82/-
Sagga Rubber Co. Ld.	1903	£20.000	24) 2,000	£1	£1	nil.	nil.!	....	25% for 1909	....	310/-
Sandycroft Rubber Co.	1904	$100,000	50,000	$2	$2	$20,000	$1,275	31.1 08	150% for year ending 31.1.10	....	$35
Sekong Rubber Co., Ld.	1908	£80.000	27) 80,000	£1	12/6	nil.	nil.	....	....	....	32/6 prem.
Shelford Rubber State Ld.	1906	£65,000	65 000	£1	£1	nil.	£836	31.12.08	7½% for 1909	....	78/9 ex div.
Singapore & Johore Rb. Co., Ld.	1903	$250,000	2,500	£2	$2	nil.	nil.	....	25% interim	....	$16
Sungei Choh. Rb. State Co., Ld.	1907	£45.000	45.000	£1	£1	nil.	nil.	....	....	....	107/6
Sungei Kapar Rubber Co.	1906	£110,000	23) 110,000	£1	£1	nil.	£3,448	31.12.08	37½% for 1909	....	16/3
Toerangie Rubber Co.	1910	30) £100,000	51,000	£1	7/6	....	....	....	First year	....	2/- prem.

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE.	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par.
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡		$750,000	$500	§ all	Half yearly, June 30th and December 31st	par (Plus
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902		Tls. 543,900	Tls. 100	....	Half yearly, June 30th and December 31st	Tls. 103½
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903		Tls. 500,000	Tls. 100	....	Half yearly, January 1st and July 1st	102½
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par. interest)
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	‖	Half yearly, March 31st and Sept. 30th	Tls. 97½.

a Authorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange Reserve Account.
i Insurance Fund.
Jj Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repair Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 4,000 shares unissued.
2 First issue of 60,000, of which 10,411 unallotted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unallotted.
6 1,616 shares unallotted.
7 75,000 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 40,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 399 shares unissued.
15 22,277 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 5,000,000.
19 12,000 issued only.
20 Typhoon and Floods Insurance Fund.
21 Special Cash Reserve.
22 1000 shares unissued.
23 10,000 shares unissued.
24 4595 part paid shares.
25 7,500 shares unissued.
26 10,000 shares unissued.
27 2 350 shares unissued.
28 25,000 shares unissued.
29 100,00 shares unissued.
30) 3.700 fully paid vendor shares and an option of 5,000 shares at par for 5 years granted to option holders.
*Based on last year's dividend.
** Based on present dividend.
§ 216 held by the Company.
‖ Only Tls. 134.000 taken up.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Comp., the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 95.
*** Redeemable at par on 30th June, 1915.
Dr Deficit.
†† Singapore dollars.
‡‡ 4,880 shares unissued.
× 16.756 shares unissued.
§§ 25,000 shares unissued.
4140 shares unissued.

ADDITIONAL SHANGHAI SHARE QUOTATIONS

July 29, 1910

STOCK	CLOSING QUOTATIONS	HIGHEST AND LOWEST PRICES DURING THE WEEK	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	LAST DIVIDEND	WHEN PAID
Oriental Consolidated Mining Co., Ltd.	35[10		G. $5,000,000	500,000	G. $10	G. $10	none	Interim of Gold 50 for 1910	June. 10, 1910
Vulcan Iron Works, Limited	Tls. 40		Tls. 500,000	1,000	Tls. 500	Tls. 500	—	Tls. 50 for year ended 31.8.06	Nov. 1, 1906
Yangtsze Wharf & Godown Co., Limited	Tls. 207		Tls. 250,000	2,500	Tls. 100	Tls. 100	Tls. 50,000	Tls. 15 for 1909	April 1, 1910
Wei-hai-wei Land & Building Co, Limited	Tls. 9 nominal		Tls. 91,850	3,674	Tls. 25	Tls. 25	—	Interim of $2.00 for 1909	Aug. 3, 1909
Anglo-German Brewing Co., Limited	$85 buyers		$100,000	4,000	$100	$100	none	5% for 1909	Mar. 12, 1910
Butler Tile Works, Limited	Tls. 25		Tls. 60,000	1,200	Tls. 50	Tls. 50	—	Tls. 3 for year ending 31.3.09	June 8, 1909
Major Bros., Limited	Tls. 55		Tls. 300,000	6,000	Tls. 50	Tls. 50	—	——	—
Oriental Ice Company, Limited	Tls. 20		Tls. 130,000	2,600	Tls. 50	Tls. 50	—	First year	—
Scharffs Oil and Bone Mills, Ltd	Tls. 40		Tls. 200,000	4,000	Tls. 50	Tls. 50	—	First year	—
Shanghai Ice Company, Limited	Tls. 12		Tls. 200,000	8,000	Tls. 25		—	3% for 1907	Mar. 14, 1908
Campbell, Moore & Co., Limited	$10		$12,000	1,200	$10	$10	$9,000	$3 for 1905	Apr. 2, 1906
Dunning & Company, Limited	$35 sellers		$100,000	2,000	$50	$50	—	$5 year ending 28.2.08	Apr. 15, 1908
J. Llewellyn & Co, Limited	$60 nominal		$72,000	1,200	$60	$60	—	7.20 for 1909	May 1, 1910
Lane, Crawford & Company	$150		$250,000	2,500	$100	$100	—	Final of 3% making 6% for 1908	June 8, 1909
S. Moutrie & Company, Limited	$40		$250,000	5,000	$50	$50	—	$2 for year ended March 31, 1909	June 18, 1909
Weeks & Company, Limited	$23		$400,000	20,000	$20	$20	$40,000	Final of 6% making 10% for 1909	June 1, 1910
Dominion Rubber Co., Limited	Tls. 62½		Tls. 225,000	22,500	Tls. 10	Tls. 4	—	First year	—
Kalumpong Rubber Co., Ltd.	Tls. 700		Tls. 700,000	14,000	Tls. 50	Tls. 50	** Tls. 11,844.48	16% for 1908	Nov. 9, 1909
Senawang Rubber Estates Company, Limited	Tls. 1550		Tls. 250,000	2,500	Tls. 100 Tls. 100	Tls. 100 Tls. 75	—	——	—
Tebong Rubber and Tapioca Estate, Limited	Tls. 48		£76,000	76,000	£1	£1	—	——	—
Shanghai Mercury, Limited	Tls. 50 buyers		Tls. 105,500	2,100	Tls. 50	Tls. 50	—	Final of 6% making 16% year 1909	June 22, 1910
Shanghai Mutual Telephone Co., Limited	Tls. 67½ buyers		Tls. 675,000	13,500	Tls. 50	Tls. 50	—	Tls. 3 for 1907	June 28, 1909
China Export, Import & Lumber Company, Limited	Tls. 75		Tls. 350,000	500	Tls. 100	Tls. 50	—	5 p. c. for 1909	May 1, 1910
China Printing Co., Limited	Tls.		Tls. 750,000	1,500	Tls. 50	Tls. 50	—	7% 1908	Apr. 18, 1909
Hirano Mineral Water Co., Ltd.	Y. 10		Y. 125,000	5,000	Y. 25	Y. 25	—	10%=yen 2½ for year ending 30th Sept. 08 Y. 1.20 for year ended Feb. 29	Apr. 26, 1909
E. E. Porter & Co., Limited	$50		$100,000	2,000	$50	$50	—	$6 for 1907	Apr. 22, 1908
Shanghai Electric & Asbestos Company, Limited	$21 sellers		$125,000	5,000	$25	$25	—	8% for year ended Feb. 28, 09	June 21, 1909
Shanghai Electric Construction Company, Limited	£6 sellers	£11	£320,000	32,000	£10	£10	—	First year	—

DEBENTURES

LOANS		PRICE—PLUS ACCRUED INTEREST	AMOUNT OF LOAN	OUTSTANDING	NOMINAL VALUE	RATE OF INTEREST	WHEN PAYABLE
Shanghai Municipal Debentures	1892	Tls. 92½	Tls. 50,000	Tls. 45,400	Tls. 100	5 %	June & Dec.
do	1893	,, 96	,, 125,000	" 32,000	" 100	5½ ,,	Do
do	1894	,, 105	,, 105,000	" 60,000	" 100	6 ,,	Do
do	1895	,, 92½	,, 115,000	" 32,600	" 100	5 ,,	Do
do	1896	,, 92½	,, 140,000	" 131,800	" 100	5 ,,	Do
do	1897	,, 92½	,, 268,800	" 268,400	" 100	5 ,,	Do
do	1898	,, 105	,, 300,000	" 60,000	" 100	6 ,,	Do
do	1900	,, 96	,, 33,900	" 31,700	" 100	5½ ,,	Do
do	1901	,, 105	,, 250,000	" 200,000	" 100	6 ,,	Do
do	1902	,, 105	,, 150,000	" 150,000	" 100	6 ,,	Do
do	1903	,, 105	,, 490 500	" 490,500	" 100	6 ,,	Do
do	1904	,, 105	,, 214,500	" 214,500	" 100	6 ,,	Do
do	1905	,, 105	,, 320,000	" 320,000	" 100	6 ,,	Do
do	1907	,, 105	,, 250,000	" 250,000	" 100	6 ,,	Do
Chinese Imperial Government Loan	1886 E	,, 250	,, 767,200	" 351,400	" 250	7 ,,	Mar. & Sept
Shanghai Land Investment Co., Debentures	1890	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	May & Nov.
do	1892	,, 96	,, 250,000	" 250,000	" 100	5½ ,,	June & Dec.
do	1894	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	Mar. & Sept.
do	1896	,, 92½	,, 250,000	" 250,000	" 130	5 ,,	June & Dec.
do	1900	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	April & Oct.
do	1901	,, 104	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
do	1901	,, 96	,, 100 000	" 100,000	" 100	5 ,,	May & Nov.
do	1902	,, 103½	,, 400,000	" 400,000	" 100	6 ,,	June & Dec
do	1905	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	Do
Shanghai Waterworks Co., Debentures	1909	,, 103	,, 815,900	" 815,900	" 100	6 ,,	Do
Perak Sugar Cultivation Co., Debentures	1902	,, 101	,, 200,000	" 200,000	" 100	7 ,,	April & Oct.
Shanghai Gas Co., Debentures	1909	,, 103	,, 800,000	" 800,000	" 100	5 ,,	Do
Shanghai and Hongkew Wharf Co., Debentures	1902	,, 102	,, 839,100	" 799,800	" 100	6 ,,	June & Dec.
Astor House Co., Debentures	1905	,, 103	,, 750,000	" 500,000	" 100	7 ,,	Do
British Municipal Council, Hankow	1901	Sh. ,, 105	H'kow Tls 100,000	H'kow Tls 100 000	" 100	7 ,,	June & Dec.
Shanghai Club Debentures	1907	,, 100	Tls. 170,000	Tls. 170,000	" 100	6 ,,	Do
Country Club Debentures		,, 97	,, 139,000	" 139,000	" 100	6 ,,	Do
do	1907	,, 97	,, 92,000	" 92,000	" 100	6 ,,	Do
Lane Crawford & Co., Debentures	1907	,, 102½	,, 110,000	" 110,000	" 100	7 ,,	Mar. & Sept.
Anglo-French Land Debentures	1908	,, 102	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
Central Stores Ltd. Debentures	1908	,, 102½	,, 250,000	" 250,000	" 100	8 ,,	Do
Shanghai Mutual Tel. Co. Debentures	1909	,, 102½	,, 350,000	" 200,000	" 100	6 ,,	Do

SINGAPORE SHARE QUOTATIONS

(Courtesy Messrs. Fraser & Co., Brokers, Singapore, July 27, 1910)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers.	Sellers.
								MINING		
1903	$300,000	300,000	30,000	10	10	......	10% interim for 1909	Belat Tin Mining Co., Ltd.	3.00	3.25
1907	$300,000	225,000	22,500	10	10	......		Bruang Ltd.	4.00	5.00
1901	$600,000	600,000	60,000	10	10	25,000	6% for year ending 30-4-09	Bruseh Hydraulic Tin Mining Co., Ltd.	5.00	6.00
1907	$400,000	375,000	37,500	10	10	......		Kanaboi, Ltd.	2.00	2.30
1901	£60,000	60,000	60,000	1	1	......	2[- interim 1909	Kinta Tin Mines, Ltd.	14.00	14.75
1905	$150,000	99,000	9,900	10	10	6,485.68	35% for year ending 31-12-07	Kuantan Tin Mining Co., Ltd.	3.00	3.25
1906	£120,000	120,000	120,000	1	1	......	1[- interim 1909.	Lahat Mines Ltd.	8.50	9.00
1906	$450,000	450,000	45,000	10	10	......		Malacca Tin Dredging Co., Ltd.	2.00	2.75
1906	£30.000	30,000	30,000	1	1	......		Malaya and Siam Corporation Ltd.	7[6	10[-
1906	£250,000	179,500	500,000e	5/-	5/-	......		Pahang Consolidated Co., Ltd.	4[-	5[-
1907	£100,000	80,000	80,000	1	1	......		Pengkalen. Ltd.	5.00	6.00
1904	£100,000	80,000	80,000	1	1	......		Pusing Bahru Tin Mines, Ltd	6.75	7.00
1904	£120,000	100,000	100,000	1	1	6,000	45% for year ending 30-6-07	Pusing Lama Tin Mines, Ltd.	....	3.00
1907	$450,000	300,000	30,000	10	10	......		Rahman Hydraulic Tin, Ltd.	9.75	10.25
1905	£27,000	27,000	27,000	1	1	......	1[- for 1907	Rambutan, Ltd.	11.50	12.50
1892	£200,000	200,000	200,000	1	1	4,873	1[2 paid April, 1910	Raub Aust. Gold Ming. Co., Ltd,	4.75	5.00
1905	£40,000	40,000	40,000	1	1	......		Redhills Tin Mining Co., Ltd.	3.00	3.50
1900	$110,000	110,000	22,000	5	5	......	3% for year ending 22-1-09	Royal Johore Tin Mining Co., Ltd.	1.35	1.50
1907	$550,000	500,000	50,000	10	10	......		Salak South, Ltd.	1.75	3.00
1907	£80,000	80,000	80,000	1	1	......		Sempam Tin Mines, Ltd.	2.00	2.50
1906	$850,000	850,000	85,000	10	10	25,000	5% interim 1909	Serendah Hydraulic Tin Ming. Co., Ltd.	5.75	6.50
1899	$230,000	230,000	23,000	10	10	......	3% for ½ year ending 31-12-08	Sipiau Tin Co., Ltd.	1.50	2.00
1909	$200,000	$150,000	15,000	10	10	......		Sungei Gau Tin Mining Co., Ltd.	4.00	5.00
1907	£90,000	70,000	70,000	1	1	......	1[6 interim 1909	Tekka, Limited	22 00	24.00
1906	£150,000	150,000	150,000	1	1	......	1[- interim 1909	Tongkah Harbour Tin Dredging Co., Ltd.	10.00	11.00
1902	£160,000	160,000	160,000	1	1	......	3[- interim 1909	Tronoh Mines, Ltd.	13.00	13.50

SINGAPORE SHARE QUOTATIONS.—(Continued.)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers.	Sellers.
								STERLING RUBBER		
1909	£85,000	75,000	750,000	2/-	2/-			Allagar Rubber Estates, Ltd.	5/9	6/3
1905	£150,000	150,000	1,500,000	2/-	2/-		80% for 1909	Anglo-Malay Rub. Co., Ltd.	1.5.3	1.6.9
1909	£50,000	35,250	470,000	2/-	1/6			Batang Malaka Rubber Estates, Ltd	1/-	2/- p.
1904	£30,000	20,187 10/-	19,000	1	1		50% for 1909	Batu Caves Rub. Co., Ltd	17.0.0	17.10.0
			4,750*f*	1	5/-					
1906	£80,000	70,000	70,000*l**	1	1		2½% for 1909	Batu Tiga (Selangor) Rubber Co., Ltd.	5.5.0	5.12.6
1909	£100,000	74,454	57,816	1	1			Bukit Kajang Rubber Estates, Ltd	3.2.6	3.5.0
			22,184*n**	1	15/-			" " " *part paid*	2.5.0	2.10.0p.
1907	£30,000	25,500	24,000	1	1			Bukit Lintang Rubber Estates, Ltd	5.7.6	5.15.0
			6,000	1	5			" " " *part paid*	2.7.6	2.10.0p.
1903	£70,000	66,700	66,700	1	1	2,000	90% for 1909	Bukit Rajah Rubber Co., Ltd.	19.10.0	20.0.0
1906	£35,000	30,000	30,000	1	1			Castlefield (K.) R. Estate, Ltd.	6.0.0	6.7.6
1909	£225,000	175,000	1750,000	2/-	2/-			Chersonese (F.M.S.) Estates, Ltd	4/-	4/9
1904	£16,000	16,000	100,000	2/-	2/-		75% for 1909	Cicely Rubber Estates Co., Ltd	2.10.0	2.12.6
			60,000	2/-	2/-		78¾% for 1909	" " " " 5% *Pref.*	2.10.0	2.12.6
1905	£75,000	62,007	620,070	2/-	2/-	1,000	80% for 1909	Consolidated Malay Rub. Estates, Ltd	1.7.6	1.10.6
1906	£110,000	102,500	102,500	1	1		50% for 1909	Damansara (Selangor) Rubber Co., Ltd.	8.10.0	9.0.0
1903	£600,000	447,200	447,200*a*	1	1			Duff Development Co., Ltd.	16/-	16/6
1909	£45,000	40,000	400,000	2/-	2/-		15% for 1909	Edinburgh Rub. Estates, (Selangor) Ld.	15/-	16/-
1907	£80,000	70,000	70,000	1	1		25% for 1909	Golconda Rubber Co., Ltd.	6.7.6	6.15.0
1906	£310,000	305,000	305,000	1	1	8,784	35% for 1909	Highlands & Lowds. Para Rub. Co., Ltd..	6.0.0	6.6.9
1904	£50,000	30,000	30,000	1	1	2,500	25% interim	Inch Kenneth Rubber Estates, Ltd	15.15.0	16.5.0
1909	£200,000	143,750	775,000*p*	2/-	1/-			Kam. (P.) R. & T. Co., Ltd. "A" Shares	6/-	7/- p.
			105,000	1	1			" " " " "B" "	....	nom.
1905	£65,000	65,000	65,000	1	1		10% for 1909	Kapar Para Rubber Estates, Co., Ltd.	9.15.0	10.5.0
1909	£35,000	£17,250	95,000	2/-	2/-			Kota Tinggi Johore Rubber Co., Ltd.	3/-	3/6
			155,000	2/-	1/-			" " " "	1/-	1/6 p
1906	£180,000	180,000	180,000	1	1		30% interim	Kuala Lumpur Rubber Co., Ltd	9.15.0	10.5.0
1907	£100,000	90,000	900,000	2/-	2/-		25% for 1909	Labu (F. M. S.) Rub. Co., Ltd.	19/-	20/-
1907	£320,000	£252,067/10/-	198,930*v*	1	1	3,000	27½% for 1909	Lanadron Rubber Estates, Ltd.	6.15.0	7.0.0
			70,850	1	15/-		27½% for 1909	" " " *part paid*	5.10.0	6.0.0 p.
1908	£125,000	75,000	60,000*g**	1	1		17½% for 1909	Ledbury Rubber Estates Ltd.	3.12.6	4.0.0
			40,000	1	7/6		17½% for 1909	" " " *part paid*	2.2.6	3.10.0p.
1895	£100,000	98,324 8/-	883,244*w*	2/-	2/-	4,000	50% interim	Linggi Plantations Ltd.,	2.17.6	2.19.6
			10,000	1	1		7% for 1909	" " " 7% *Pref.*	....	nom,
1907	£140,000	118,000	1,180,000*k*	2/-	2/-		12½% for 1909	London Asiatic R. & Produce Co., Ltd.	14/-	15/-
1909	£220,000	147,500	50,000	1	1			Lumut Rubber Estates, Ltd.	....	nom.
			150,000	1	13/-			" " " " *part paid*	1.0.0	1.7.6 p.
1906	£400,000	300,000	185,000	1	1		10% interim for 1909	Malacca Rubber Plants., Ltd.	9.15.0	10.5.0
			115,000	1	1		" " "	" " " " 7½% *Pref.*	9.15.0	10.5.0
1909	£210,000	175,000	1,750,000	2/-	2/-			Merlimau Rubber Estates, Ltd	7/3	7/6
1903	£30,000	22,500	225,000	2/-	2/-		125% for 1909	Pataling Rubber Estates Synd. Ltd	3.8.6	3.10.0
1906	£85,000	85,000	85,000	1	1		12½% interim 1909	Perak Rubber Plantations, Ltd	6.0.0	6.5.0
1909	£60,000	36,875	15,000*s**	1	1			Rembia Rubber Estates Ltd.	....	nom.
			35,000	1	12/6			" " " 6% *Cum. Pref.*	9/-	10/6 p.
1904	£25,000	19,092	17,732*u*	1	1		25% interim	Sagga Rubber Company, Limited	16.0.0	16.10.0
			2,268	1	12/-					
1905	£100,000	100,000	71,378	1	1			Sapong Rubber and Tobacco Estates, Ltd.	1.5.0	1.10.0
			28,622*l*‡							
1907	£100,000	100,000	100,000	1	1		15% for 1909	Seafield Rubber Co., Ltd	7.7.6	7.15.0
1898	£30,000	30,000	300,000	2/-	2/-	3,000	287½% for 1909	Selangor Rubber Co., Ltd	3.13.6	3.16.0
1909	£50,000	32,000	40,000	1	16/-			Sendayan (F. M. S.) Rubber Co., Ltd	1.17.6	2.2.6 p.
1906	£65,000	65,000	65,000	1	1		7½% for 1909	Shelford Rubber Estate, Ltd	3.18.0	4.2.0
1909	£150,000	78,500	14,000*i*‡	1	1			Sialang Rubber Estates, Ltd	1.7.6	1.10.0p.
			86,000	1	15/-					
1909	£120,000	100,000	100,000	1	1			Singapore Para Rubber Estates, Ltd.	3.12.6	3.17.6
1906	£192,500	192,500	1,925,000	2/-	2/-		7½% interim	Straits Settlements (B.) Rub. Co., Ltd	7/6	8/-
1907	£45,000	45,000	45,000	1	1			Sungei Choh Rub. Estate, Co. Ltd. *Fully pd.*	5.2.6	5.10.0
1906	£110,000	100,000	1,000,000	2/-	2/-		37½% for 1909	Sungei Kapar Rubber Co., Ltd	17/-3	18/-
1907	£70,000	55,000	55,000	1	1			Sungei Salak Rubber Co., Ltd	4.12.6	4.17.6
1904	£50,000	50,000	50,000	1	1			Sungei Way (Selangor) Rub. Co., Ltd	6.2.6	6.12.6
1908	£150,000	60,000	36,000	1	1			Tebrau (Johore) Rubber Co	4.15.0	5.0.0
			64,000	1	7/6			" " " *part paid*	3.2.6	3.7.6 p.
1907	£200,000	170,000	170,000	1	1		5% interim	United Serdang (S.) R. Plantations, Ltd.	6.15.0	7.5.0
1908	£85,000	65,000	650,000	2/-	2/-		10% for year ending 30-6-09	United Sumatra Rubber Estates, Ltd...	12/-	12/9
1904	£60,000	50,600	506,000	2/-	2/-		66⅔% interim 1909	Vallambrosa Rubber Co., Ltd.	2.12.0	2.13.6
								DOLLAR		
1909	$120,000	105,000	105,000*w**	1	1			Alor Gajah Rubber Estate, Ltd	2.50	3.00
1909	$750,000	700,000	140,000	5	5			Ayer Panas Rubber Estates, Ltd	10.00	10.50
1905	$200,000	151,200	151,200	1	1	5,250	40% interim	Balgownie Rub. Estate, Ltd	17.00	18.00
1910	$500,000	500,000	50,000	10	10			Bukit Timah Rubber Estates, Ltd	20.00	22.00
1910	$750,000	700,000	70,000	10	10			Changkat Serdang Estates, Ltd	12.50	13.00
1909	$300,000	300,000	300,000	1	1			Glenealy Plantations, Ltd	2.50	2.75
1910	$200,000	144,285	12,857*m*‡	5	5			Haytor Rubber States, Ltd	....	nom.
			20,000	5	4			" " " " *part paid*	2.00	5.00 p.
1910	$600,000	150,000	30,000	10	5			Henrietta Estates, Ltd.	2.00	3.00 p.
1906	$680,000	680,000	40,000	17	17			Hevea Rubber Planting Co. Ltd.	18.00	20.00
1909	$250,000	200,000	20,000	10	10			Indragiri (S.) R. and Gutta P. Co., Ltd..	23.00	24.00
1910	350,000	291,000	11,000	5	5			Kelemak Rubber Estate, Ltd.	4.50	5.00
			59,000	5	4			" " " *part paid*	0.50 dis.	par.
1907	$300,000	140,000	20,000	10	7			Kombok Rubber Co., Ltd	20.00	25.00p.
1910	$1,000,000	1,000,000	500,000	2	2			Malakoff Rubber Co., Ltd.	2.15	2.40
1909	$400,000	400,000	80,000	5	5		5% interim	Pajam Limited.	15.25	15.75
1909	$200,000	200,000	200,000	1	1			Pantai, Limited	1.80	1.90
1909	$500,000	450,000	45,000	10	10		7½% interim	Pegoh, Limited	35.00	37.00
1910	$450,000	295,000	45,000*f*‡	5	5			Port Dickson Rubber Co., Ltd	14.00	15.00
			35,000	5	2			" " "	5.00	6.00 p.
1904	$100,000	100,000	50,000*b**	2	2	20,000	50% pending	Sandycroft Rubber Co., Ltd.	34.00	35.00
1905	$500,000	500,000	5,000	100	100			Singapore Rubber Co., Ltd.	475.00	500.00
1903	$450,000	417,300	208,650	2	2		25% interim.	Singapore & Johore Rub. Co. Ltd.	15.00	16.00
1909	$250,000	100,000	10,000	10	10			St. Helena Rubber Coy., Ltd	40.00	45.00
1909	$200,000	165,000	33,000	5	5			Teluk Anson Rubber Estate, Ltd.	6.50	7.50
1909	$1,000,000	637,500	737,500*y**	1	1			United Singapore Rubber Estates, Ltd.	1.50	1.80
				1	-/50			" " " " "	....	nom.
								GENERAL		
1903	£400,000	400,000	400,000	1	1			Singapore Electric Tramways, Co., Ltd.	4/3	4/6
1907	$1,500,000	1,065,150	25,000*d**	10	10		10% for year ending 31/12/08	Eastern Smelting Co. Ltd.	....	10.00 n.
			116,450	10	7		10% for year ending 31-12-08	" " " *part paid*	....	6.00 n.
1898	$225,000	225,000	4,500	50	50	170,000	15% & 5% bon. for yr. end. 31-12-09	Fraser & Neave, Ltd.	210.00	215.00
1905	$2,400,000	2,400,000	18,000	100	....	75,000	2½% for year ending 31-10-08	Howarth Erskine, Ltd.	58.00	60.00
			6,000	100	....		7% for year ending 31-10-08	" " 7% *Pref.*	91.00	95.00
1896	$1,000,000	1,000,000	6,000	100	100	40,600	12% for year ending 31-12-09	Katz Brothers, Ltd. *Deferred*	....	125.00
			4,000	100	100		8% " " " "09	" " 8% *Cum. Pref*	....	nom.
1901	$34,000	34,000	3,400	10	10		20% for year ending 31-10-09	Maynard & Co., Ltd.	22.00	23.00
1899	$875,000	875,000	6,000	100	100	175,000	5% for year ending 31/12/09	Riley, Hargreaves & Co., Ltd.	77.50	82.50
			2,750	100	100		7% for year ending 31/12/09	" " " " 7% *Pref*	102.00	....
1897	£3,500,000	3,500,000	2,500,000	1	1	1,120,000	22½% for 1909	Shell Transport and Trading Co., Ltd.	5.0.0	5.2.6
			100,000	10	10			" " " " *Pref.*	11.5.0	12.0.0
1903	$600,000	250,000	25,000*n*	10	10		10% for year ending 30-6-09	Singapore Cold Storage Co., Ltd	15.00	16.00
1891	$30,000	30,000	600	50	50	23,000	10% for year ending 31-7-09	Singapore Dispensary Ltd.	50.00	52.50
1884	$200,000	200,000	2,000	100	100	75,000	15% for year ending 31-12-09	Straits Ice Co., Ltd	160.00	165.00
1890	$500,000	498,000	4,980	100	100	760,000*q*	10% for year ending 31-12-09	Straits Steam Ship Co., Ltd.	215.00	225.00
1887	$3,000,000	3,000,000	300,000	10	10	130,000*r* 1,222,409	10% & 5% bon. for half yr. end. 31/3/10	Straits Trading Co., Ltd.	57.00	57.50
								DEBENTURES		
								Howarth Erskine, Ltd. 6% $ 600,000	....	par.
								Riley, Hargreaves & Co., Ltd. 6% 284,000	1%	3% p.
								Singapore Electric Tramways, Co., Ltd. 5% £350,000	....	....
								Singapore Municipal 5% 1,878,000	....	nom.
								" " 4½% of 1907 1,600,000	6%	7% p.
								" " 4½% of 1909 1,000,000	7%	8% p.
								" " 4% 602,900	....	7% d.

a 152,800 unissued; 43,949 6% debenture
e 54,500 £1 Prefs. issued; 45,500 £1 " unissued; 100,000 5/- Ord. "
f 6,250 unissued
k £40,000 6% Debentures 220,000 unissued
p 175,000 unissued "A" shares
q Sundry Reserves.
r "
u 5,000 issued £1 prem.
v 50,220 unissued
w 16,756 "
*b** 221 7½% Debentures
*d** 8,550 unissued
*g** 25,000 "
*l** £10,000 Convertible 6% Debentures issued; £10,000 do. unissued
*n** 20,000 unissued
*y** 262,500 "
*s** 10,000 "
i‡ 50,000 "
l‡ 6% Deb. Stock Convertible.
m‡ 7,143 unissued.

YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, AUGUST 25TH, 1910.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
Brett & Co., Ltd.	-Y- 28,000	2,800	-Y- 10	-Y- 10	31-12-09	12½%	for 1 year	15 Sellers
Club Hotel, Ltd.	185,000	1,850	100	100	31-3-10	6%	for 1 year	70 Nominal
Grand Hotel, Ltd.	500,000	5,000	100	100	31-6-10	5%	for ½ year	95 Sales.
Helm Bros., Ltd.	186,000	3,720	50	50	31-12-10	17½%	for 1 year	85 Sales.
Langfeldt & Co., Ltd.	100,000	2,000	50	50	31-6-09	6%	for ½ year	60 Nominal.
C. Nickel & Co., Ltd. †	500,000	20,000	25	25	31-10-09	20%	for 1 year	50 Sales.
Thwaites, Limited	100,000	2,000	50	50	First Year	—	—	
Yokohama Engine and Iron Works *	500,000	10,000	50	50	31-5-09	—	for 1 year	50 Nominal
Oriental Hotel, Ltd., Ordinary	250,000 (Ordinary and Preference)	3,000	50	50	31-8-07	12%	for 1 year	50 Sales.
Oriental Hotel, Ltd., Preference		2,000	50	50		8%	for 1 year	52:50 Sales
The Union Estate and Investment Co., Ltd. ‡	1,000,000	10,000	100	100	30-9-09	6½%	for 1 year	100 Nominal.
The Clifford Wilkinson Tansan Mineral Water Co., Ltd. §	500,000	5,000	100	100	31-12-09	7%	for 1 year	100 Buyers.

† 285,000 unissued.
‡ 475,000 unissued.
*-Y- 390,000 issued.
§-Y- 375,800 issued.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Brett & Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	95 Sales.
Yokohama United Club	230,000.00	100.00	6%	30 June and 31 Dec.	102 Nominal.
Oriental Hotel, Limited	350,000.00	100.00	8%	1 April and 1 Oct.	103 Sales.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	95 Sellers.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	LAST DIVIDEND.	DIVIDEND PAYABLE.	CLOSING QUOTATION.
Bonds & Debentures.					
Exchequer Bonds 2nd issue	-Y-100	-Y-100	5%	March and Sept.	-Y-101.70
Exchequer Bonds 3rd issue	100	100	5%	March and Sept.	,, 101.70
Railway Bonds (Ko-Gobu)	100	100	5%	June and Dec.	,, 101.70
4% Imperial Loan Bonds (1st issue)	100	100	4%	June and Dec.	,, 96.00
4% Imperial Loan Bonds (2nd issue)	100	100	4%	March and Sept.	,, 97.00
Imperial 5% Bonds	100	100	5%	March and Sept.	,, 101.30
Special 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 100.10
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 105.00
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 105.50
Osaka City Harbour Construction Bonds	100	100	6%	June and Dec.	,, 105.50
Osaka City Public Loan Bonds	100	100	6%	June and Dec.	,, 105.50
Kawasaki Dock Yards Co.'s Debentures	100	100	7%	June and Dec.	,, 104.00
Tokyo Race Associations "	500	500	30%	June and Dec.	,, 180.00
Railways & Electric Trams.					
Tokyo Railway Company, Limited	50	50	5 2/5%	June and Dec.	,, 72.65
Yokohama Electric Tramway Company, Limited	50	50	6%	July and Jan.	,, 55.50
Keihin Electric Tramway Company, Limited	50	50	6%	June and Dec.	,, 51.50
Southern Manchurian Railway Co., Ltd.	100	20	6%	June and Dec.	,, 46.00
Hanshin Electric Tramway Co., Ltd.	50	50	12%	May and Nov.	,, 131.00
Cotton Spinnings.					
Kanegafuchi Cotton Spinning Company, Limited	50	50	14%	July and Jan.	,, 104.00
Fuji Gassed-yarn Company, Limited	50	50	14%	July and Jan.	,, 88.95
Tokyo Cotton Spinning Company, Limited	50	50	8%	July and Jan.	,, 43.80
Imperial Hemp Weaving Company, Limited	50	50	12%	July and Jan.	,, 73.00
Nisshin Boseki Kabushiki Kaisha	50	17½	7%	——	,, 12.55
Sugar & Beer Cos.					
Dai-nippon Sugar Refinery Company, Limited	50	50	....	May and Nov.	,, 36.00
Ensuiko Sugar Refinery Company, Limited	50	20	20%	June and Dec.	,, 50.25
Dai-nippon Beer Company, Limited	50	50	12%	July and Jan.	,, 81.70
Kirin Brewery Company, Limited	50	50	7%	July and Jan.	,, 53.00
Docks & Steamships.					
Yokohama Dock Company, Limited	50	33	12%	June and Dec.	,, 63.50
Uraga Dock Company, Limited	50	50	....	July and Jan.	,, 7.50
Kawasaki Dockyard Company, Limited	50	50	12½%	Feb. and Aug.	,, 54.00
Nippon Yusen Kaisha	50	50	10%	May and Nov.	,, 98.00
Hokkaido Tanko S. S. Company, Limited	50	50	5%	July and Jan.	,, 29.00
Miscellaneous.					
Tokyo Electric Light Company, Limited	50	50	12%	June and Dec.	,, 104.70
Tokyo Gas Company, Limited	50	50	13%	July and Jan.	, 116.95
Yokohama Union Electric Light Company, Limited	50	50	14%	June and Dec.	,, 113.00
Fuji Paper Mills	50	50	6%	June and Dec.	,, 30.00
Otaru Timber Company, Limited	50	50	....	March and Sept.	,, 13.00
Hoden Petroleum Company, Limited	50	50	20%	April and Oct.	,, 70.00
Tokyo Rope Manufacturing Company, Limited	50	50	18%	June and Dec.	,, 112.00
Japan Horse Improvement Company, Limited	50	50	....	March and Sept.	,, 14.00
Tokyo Stock Exchange Company	50	50	15 1/5%	June and Dec.	,, 213.00
Osaka Electric Light Company, Limited	50	50	16%	July and Jan.	,, 142.00
Kobe Electric Light Company, Limited	50	50	14%	July and Jan.	,, 107.00

BANGKOK SHARE QUOTATIONS

(COURTESY MESSRS. EDWARDS & CO., BANGKOK, SIAM.) JULY 1, 1910

NAME.	BUYERS.	SELLERS.	LAST SALES.	ESTABLISHED.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND	LAST DIVIDEND
Siam Electricity Co., Ltd.	Tcs. 300	Tcs. 325	Tcs. 325	1901	£ 300,000	30,000	£ 10—	£ 300,000	Tcs. 491,338	12% Tcs. 4 bon.
Paknam Railway Co., Ltd	,, 200	,, —	,, 220	1893	Tcs. 400,000	5,000	Tcs. 80	Tcs. 400,000	,, 37,566	14%
Siam Tramway Co., Ltd	,, —	,, —	,, 108	1905	,, 1,450,000	6250 Shares 7250 Deb. 1000 P. Shares	,, 100	,, 2,230,000	,, 1,875	—
Meklong Railway Co., Ltd	,, 90	,, 100	,, 90	1907	,, 2,230,000	22,300	,, 100	,, 223,000	,, 28,000	5%
Bangkok Manufact. Co., Ltd	,, —	,, —	,, 132	1898	,, 400,000	4,000	,, 100	,, 400,000	,, 60,000	7% per for 6 months
Bangkok Dock Co., Ltd	,, —	,, 135	,, 135	1865	,, 1,000,000	10,000	,, 100	,, 950,000	,, 220,000	
Siam Steam Packet Co.	,, 80	,, 909	,, 90	1898	,, 190,000	3,800	,, 50	,, 190,000	,, 34,000	5%
Siam Commercial Bank	,, 1,000	,, 1,500	,, 1,000	1906	,, 3,000,000	3.000	,, 1,000	,, 3,000,000	,, 338,850	4% for 6 mos.
Menam Motor Boat Co.,	,, 75	,, 90	,, 90	1905	,, 200,000	2,000	,, 100	,, 200,000	—	none
Transport Co., Motor,	,, —	,, 75	,, 100	1906	,, 200,000	2,000	,, 100	,, 200,000	—	—
Jenderata Rubber Co.*	,, —	,, 325— Ticals	,, 325 (for six calls)	1906	£ 40,000	4.000	£ 10	£ 7.-paid	—	—
Bagan Rubber Co.	,, —	,, 100	,, 100	1907	Tcs. 300,000	3,000	Tcs. 100	Tcs. 40 per share	—	—
Siam Steam Navigation Co., Ltd	,, 300	,, 325	,, —	1909	,, 2,000,000	10,000	,, 200	—	,, 10,000	—
Siam Stone Works, Ltd.	,, —	,, —	100	1909	,, 350,000	3,500	,, 100	,, 350,000	—	6% half year
Kombok Rubber Co	,, 25	,, 35	32	1906	$ 300,000	30,000	$ 100	$7, per Share	—	—

PHILIPPINE SHARE REPORT

COURTESY B. A. GREEN, GENERAL, SHARE, BOND AND INVESTMENT BROKER.—*Manila, P. I., September 10, 1910.*

NAME	CLOSING QUOT'N	WHEN INCORPORATED	AUTHORIZED CAPITAL	ISSUE VALUE OF SHARES	NUMBER OF SHARES*	NUMBER OF SHARES SUBSCRIBED	PAID UP	RESERVE FUND	WORKING ACCOUNT	DATE	LAST DIVIDEND
American Drug Store		1908	₱ 100,000	₱1,000	100	51	₱1,000	₱5,000	₱ 50,000	June 30, 1910.	
Antamok Valley Mining Co	₱0.45	1909	500,000	1	500,000	320,000	1				First year
Banco Español Filipino	₱235.	1851	3,000,000	200	15,000	12,980	200	408,715		July 1, 1910.	5% First Half 1910
Bayhay Valley Oil Co	100.	1909	100,000	100	1,000		100				First year
Benguet Commercial Co	85.	1908	200,000	100	2,000	736	100				8% for 1906
Benguet Consolidated Mining Co	0.70	1903	2,000,000	2	1,000,000	495,000	2				
Bua Mining Co.											
Common	90.	1905	750,000	100	7,000	3,366	100				
Preferred	140.			100	500	500	100				
Cadwallader-Gibson Lumber Co		1908	1,000,000	100	10,000	8,650	100				
Camote-Clayton Mining Co		1909	400,000	10	40,000	26,000	10				First year
Compania Maritima	41.	1894	510,000	100	5,100	5,100	100				20% for 1902
East Batan Coal Mining Co	33.	1909	3,000,000	50	60,000	40,000	50				First year
El Varadero de Manila	70.	1885	450,000	100	4,500	4,500	100				3½% for 1909
Electrical Supply Co		1909	100,000	100	1,000	500	72				First year
Export & Import Lumber Co		1908	200,000	200	1,000	1,000	200				
Escolta Press Inc	105.	1907	50,000	100	500	320	100				12% for 1909
Fabrica de Hielo de Manila	62.	1894	350,000	50	7,000	7,000	50				3% for 1st Qt 1910
Germinal Cigar Factory	440.	1900	1,500,000	500	3,000	3,000	500				12% for 1909
H. E. Heacock & Co		1909	100,000	100	1,000	800	100				First Year
Headwaters Mining Co	10.	1908	600,000	10	60,000	35,000	10				
Insular Lumber Co	140.	1907	2,000,000	200	10,000	9,000	200				
Lepanto Mining Co		1906	1,000,000	100	10,000	8,000	100				
Juan Seiboth Co		1908	150,000	20	7,500	500	20				
La Concha Button Factory	95.	1905	75,000	100	750	530	100				15% for 1909
Los Banos Improvement Co	150.	1908	100,000	200	500	500	200				8% for 1908
Lambert, Springer Co		1908	200,000	1,000	200	80	1,000				
Luzon Stevedoring Co	25.	1909	250,000	25	10,000	4,200	25				
Luzon Sugar Refining Co		1882	700,000	100	7,000	7,000	100				3% for 1907
Manila Electric Ry. & Light Co	125.	1903	12,000,000	200	60,000		200				4% for 1909
Manila Hotel Co	100.	1909	400,000	100	4,000	3,500	100				Under Construction
Minas Carbon de Batan	240.	1902	1,000,000	200	5,000	1,523	200				
Mindanao Herald Publishing Co		1907	15,000	100	150	75	100				½% for 1908
Paracale Gold Dredging Co	15.	1907	£10,000	£1	10,000	10,000	£1				£1 for 1908-9
Paracale Ext. Gold Dredging Co	10.	1909	₱450,000	₱10	45,000		₱10				First Year
Palomar Park Amusement Co	0.25	1908	300,000	1	300,000		1				
Phil. Hemp Machine Co		1908	1,000,000	100	10,000		100				
Philippine Publishing Co	120.	1907	600,000	200	3,000	2,200	120				5½% for 1910
Philippine Co., Ltd	10.	1904	750,000	10	75,000	75,000	10				
Philippine Gold Dredging Co	10.	1907	200,000	10	20,000	20,000	10				
Philippine Rosin & Turpentine Co.		1908	150,000	1	150,000	70,000	1				
Philippine Exploration Co	12.	1908	2,000,000	10	200,000	120,000	10				
Port Banga Lumber Co		1908	100,000	100	1,000	934	100				
Rosenstock Publishing Co		1908	75,000	10	7,500	6,000	10				
San Nicolas Iron Works	100.	1901	300,000	500	600	600	500				15% for 1903
San Mauricio Gold Mining Co	35.	1908	4,000,000	200	20,000	20,000					
Sanitary Steam Laundry	21.	1908	100,0000	20	5,000	3,000	20				
Tarlac Railway Co	65.	1906	150,000	100	1,500	1,500	100				
Tumbaga Mining Co	15.	1909	1,000,000	40	25,000	24,125	40				First Year
Union Hemp Machine Co		1909	50,000	10	5,000	2,600	10				First Year
Walter E. Olsen Co	100.	1909	500,000	100	5,000	2,033	100				First Year
Zamboanga Cold Storage Co	125.	1903	40,000	100	400	200	100				20% for 1909

PHILIPPINE BONDS

	DATED	AUTHORIZED	ISSUED	OUTSTANDING	PAR VALUE	RATE OF INT.	WHEN PAYABLE	LAST QUOTATION
Philippine Friar Land Bonds	Feb. 1st, 1904	$7,000,000	$7,000,000	$7,000,000	$ 100	4%	Feb. 1, 1914	104[illegible]
Public Works and Permanent Improvement Bonds	March 1, 1905	$5,000,000	$2,500,000	$2,500,000	$ 100	4%	March 1, 1915	104[illegible]
Do.	Feb. 1, 1906		$1,000,000	$1,000,000	$ 100	4%	Feb. 1, 1916	104[illegible]
Manila Sewer and Water Works Improvement Bonds	June 1, 1905	$4,000,000	$1,000,000	$1,000,000	$ 100	4%	June 1, 1915	104[illegible]
Do.	Jan. 2, 1907		$2,000,000	$2,000,000	$ 100	4%	Jan. 2, 1917	104[illegible]
Philippine Railway First Mortgage Four per cent Thirty Year Sinking Fund Gold Bonds	July 1. 1907	$15,000,000	$5,736,000	$5,736,000	$1000	4%	July 1, 1937	97

*Payment of interest guaranteed until maturity or redemption by the Philippine Government.

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American Asiatic S. S. Co ... 31
American Hardware & Plumbing Co ... 23
Anderson & Co., Wm. H ... 41
Anderson, Meyer & Co ... 30
Arnhold Karberg & Co ... 19
Astor House Hotel Co ... 53
Atlantic, Gulf & Pacific Co ... 27

Baldwin Locomotive Works ... 32
Banco Español Filipino ... Cover
Bell, David W ... 18
Bohler Bros & Co ... 57
British American Tobacco Co., Ltd. ... 35

Cadwallader-Gibson Lumber Co. ... 23
California-Manila Lumber Co ... 21
Carmichael & Clarke ... 10
Chee Hsin Cement Co., Ltd ... 42
China Import Export Lumber Co. ... 51
China Merchants Steam Nav. Co. ... 38
China Mutual Life Insurance Co. ... 52
China and Manila S. S. Co ... 31
Chinese Eng. & Mining Co ... 4
Chinese Eastern Railway ... 16
Cia. General de Tabacos Filipinas. ... 36
Cia. Trasatlantica ... 35
Clarke, M. A ... 44
Cook's Sons, Adam ... 51
Defiance Machine Works ... 20
Derham Bros ... 23
Detroit Engine Works ... 29
Deutsch-Asiatische Bank ... 1
Dickeson, Jones & Co ... 48
Dollar, Co., The Robert ... 39

Earnshaw, M. & Co., Inc ... 7
East Asiatic Dredging Co ... 27
Eastern Engineering Co ... 5
Electrical Supply Co. Inc ... 60
Export and Import Lumber Co ... 28
Fearon, Daniel & Co ... 13-30
Fairbanks Morse & Co ... 5
Ferro Machine & Foundry Co ... 29
Fox Typewriter ... 33
Fressel, C. & Co ... 24
Fushun Coal ... 8
Gardner Governor Co ... 32
General Electric Co ... 20
Germann & Co., Ltd ... 28
Germinal Cigar Factory ... 35
Gordon & Co ... 52
Grand Rapids Gas Engine & Yacht Co ... 29
Gray Motor Co ... 29
Green Island Cement Co., Ltd. ... 40
Greilsammer Bros ... 24
Han-yeh-Ping Iron & Coal Co. Ltd. ... 59
Hanyang Iron & Steel Works ... 61
Harvey, Stuart S. ... 45
Hongkong Rope Mfg. Co., Ltd ... 31
Hongkong & Shanghai Banking Corp ... Cover
Hongkong & Whampoa Dock Co., Ltd. ... 10
Honolulu Iron Works Co ... 58
Hotel de France ... 51
Hotel St. Francis ... 59
Hupeh Cement Co ... 42
Imperial Hotel, Ltd ... 52
International Correspondence Schools ... 13
International Cold Stores, Ltd ... 41
International Banking Corp ... Cover
Jardine, Matheson & Co ... 25
Kawasaki Dockyard Co. Ltd ... 7
Kiangnan Dock & Engineering Works ... 8
La Parisien Carriage Factory ... 34
Lambert-Springer Co ... 62
Lodge & Shipley Machine Tool Co. ... 27
Malthoid ... 60
Melchers & Co ... 40
Michigan Steel Boat Co ... ...
Mitsu Bishi Dockyard & Eng. Works ... 6
Mitsui Bussan Kaisha ... 5-47
Morse & Son, A. J ... 150
Murray, Wilbur H. Mfg. Co ... 57
New Metropole Hotel ... 52
New Engineering and Shipbuilding Works, Ltd ... 11
Nicholson, C. S ... 6
Nippon Yusen Kaisha ... 39
North British Locomotive Co. Ltd. ... 49
Olsen & Co., Walter E ... Cover
Pacific Mail S. S. Co ... 37
Pacific Tank and Pipe Co ... 62
Paraffine Paint Co ... 62
Penberthy Injector Co ... 32
Philippine Islands ... 2
Pickett Harness Co ... 34
Port Banga Lumber Co ... 24
Racine, Ackermann & Co ... 41
Remington Typewriter Co ... 33
Rose, Downs & Thompson, Ltd ... 46
Russo-Chinese Bank ... 1
San Miguel Brewery ... 52
Santa Mesa Rope Works ... 18
Schuchardt & Schütte, Berlin ... 43
Shanghai Dock & Eng. Co., Ltd ... 12
Shanghai Electric and Asbestos Co., Ltd ... 46
Shanghai Gas Co., Ltd ... 28
Shanghai Nanking Railway ... 15
Shanghai Machine Co ... 26
Shanghai Waterworks Co. Ltd ... 50
Shewan, Tomes & Co. ... 48
Siemens Schuckert ... 17
Siemssen & Co ... 22
Southern Pacific Co ... 57
South Manchuria Railway Mining Dept ... 3
South Manchuria Railway ... 14
Stevenson & Co., Ltd., W. F ... 10
Strong, Frank L ... 45
Superior Wrench Co ... 29
Swift & Co ... 32
Taikoo Dockyard and Engineering Company of Hongkong, Ltd ... 9
Thompson F. H ... 51
Toyo Kisen Kaisha ... 29
Truscott Boat Mfg. Co ... 50
Trussed Concrete Steel Co ... 32
Tsingtauer Werft ... 56
United States Steel Products Export Co ... 54
Vander Loo & Co. F. A ... 31
Vulcan Iron Works ... 57
Vulcan Iron Works Ltd ... 18
Warner Barnes & Co., Ltd ... 21
Wen Ming Press ... 26
White & Co. (Inc.), J. G ... 34-60
Western Electric Co ... 58
Westinghouse Brake Co., Ltd ... 57
Wood Waste Distilleries Co ... 43
Woosung Car Shops ... 55
W. T. Henley's Telegraph Work Co., Ltd ... 18
Ynchausti & Co ... 27
Yokohama Specie Bank ... 1
Young, C. G ... 149
Zimmerman Steel Co ... 60

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(Please mention this journal)

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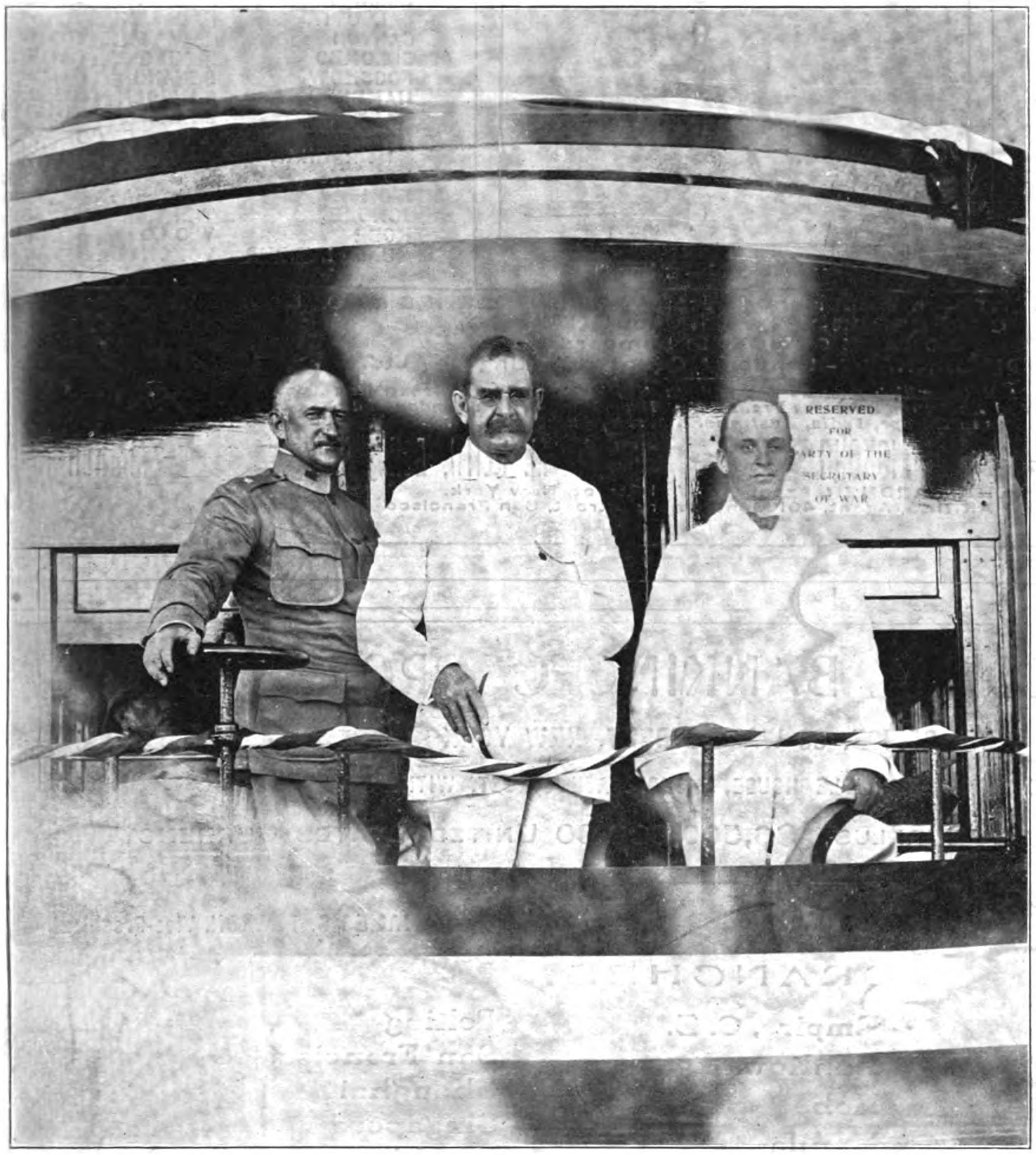
THE FAR EASTERN REVIEW

VOL. VII.—No. 5. MANILA, SHANGHAI AND YOKOHAMA, OCTOBER, 1910. 50 Centavos Philippine Currency 25 Cents. U. S. C.



Rear View of Special Train on Philippine Railway Co.'s Line at Passi, Panay, Showing Secretary of War Dickinson, General Edwards and Governor General Forbes on Occasion of the Formal Opening of the Line.

Opening of the British Section of the Kowloon-Canton Railway

Canton-Hankow Railway Construction

Philippine Railways for 1910

General News and Comment

Cyaniding in the Philippines

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COMMERCE FINANCE

Hongkong and Shanghai Banking Corporation

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THE FAR EASTERN REVIEW

COMMERCE ✲ ENGINEERING ✲ FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, SEPTEMBER, 1910 No. 4.

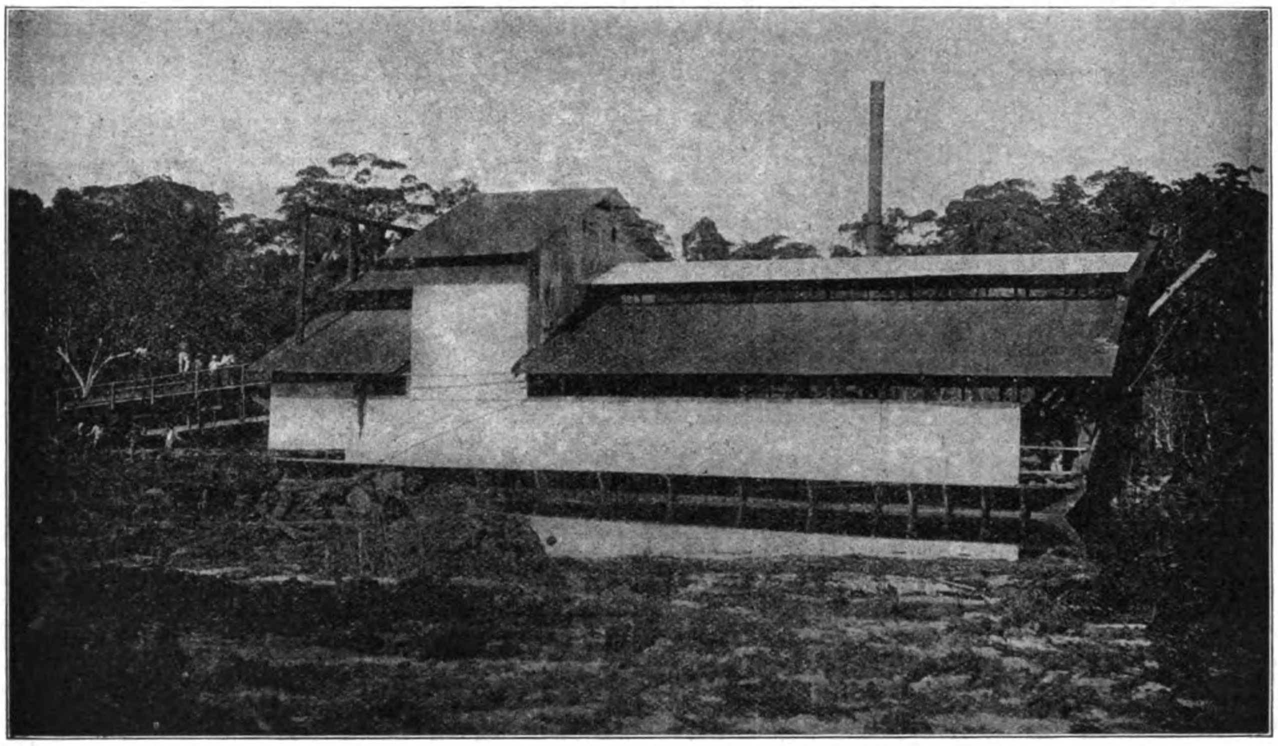
The Mineral Resources of the Philippine Islands

A comprehensive review of the mineral resources of the Philippine Islands, with a statement of the production of commercial mineral products during the year 1909, has just been issued by the Division of Geology and Mines, Bureau of Science, under the direction of Warren D. Smith, Ph. D., Geologist and Chief of the Division, and through the courtesy of the Director of the Bureau illustrations have been placed at the disposal of the FAR EASTERN REVIEW for reproduction.

In the introduction, the Chief of the Division expresses satisfaction with the development of large blocks of ore, but also can utilize the experience of others who have operated.

"The increase in the coal output is very satisfactory, as is also the awakened interest in other deposits such as oil, sulphur, and iron. Copper, too, is receiving close attention. Perhaps the greatest interest of the year has been in the Tayabas oil fields. Many claims have been located on the peninsula. Recently an oil rig was shipped to the region, and it is hoped that encouraging results will soon be obtained."

The following statistics are submitted covering the increase in production which have



Courtesy Bureau of Science

THE STANLEY DREDGE OPERATING ON THE PARACALE RIVER

work in this industry and is optimistic as to the future. He writes:

"The production of gold in 1909 shows only a slight increase over the preceding year. A careful investigation of the facts demonstrates that this is not an unhealthy siSn. The chief cause of the apparent setback in Benguet was due to severe floods which for a time crippled the two largest plants. However, another reason is found in the fact that the operators of mines have reached the conclusion that a larger amount of work than formerly should be expended on development, rather than as at present in operating mills. An encouraging amount of underground work is now being done on the majority of the properties, and in some cases some very large bodies of ore are blocked out. Those who have waited the longest before putting up mills have not only the advantage special reference to the output of gold and coal:

TABLE I.—*Mineral production in* 1909

[In pesos (*a*) Philippine currency.]

Source.	Gold.	Silver. (b)	Copper.	Iron.	Manganese.	Coal.
Albay						(*c*) 197,184
Ambos Camarines	216,701					
Bulacan				31,078		
Ilocos Sur	1,425					
Ilocos Norte					12,500	
Masbate	(*d*)					
Mindanao (Surigao)	10,608					
Mountain Province	256,400		(*e*)			
Nueva Ecija	7,200					
Pangasinan	2,500					
Tayabas	360					
Total	495,194			31,078	12,500	197,184

Total metallic with coal	735,956
Total nonmetallic	1,504,091
Grand total	2 240,047

(*a*) One peso Philippine currency is equal to fifty cents United States currency.

(*b*) Some silver generally found alloyed with Philippine gold. None is mined separately.

(*c*) 30,336 tons, at 6.50 pesos per ton.

TABLE II.—*Comparative statement of mineral production in* 1907, 1908, *and* 1909.

[In pesos Philippine currency.]

Year	Gold.	Silver.	Copper.	Iron.	Coal.	Manganese.	Nonmetallic.
1907	141,194	95.53	–		26,799		
1908	434,500	2,750.0052		17,500	77,166		815,918
1909	495,194	(*f*)		31,078	197,184	12,500	1,504,091

(*d*) No mills running.

(*e*) Small amount smelted by Igorots.

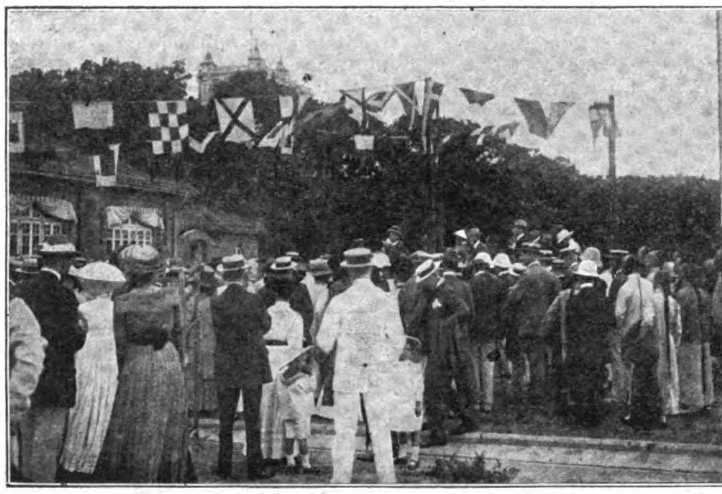
(*f*) Not estimated separately.

poration obtained a concession for the construction of a railway between Canton and Kowloon. Much delay ensued in negotiating with the Chinese Corporation for the construction of the Chinese Section and it was not till 1906 that circumstances justified the commencement of the construction of the British Section. After protracted negotiations the agreement for the Chinese Section was signed by the British and Chinese Corporation on the 7th March, 1907, and shortly after the construction of that Section also was commenced. A good deal has been said off and on about the cost of the railway—railways like this one which are intended for the development of a district usually do cost a good deal, and until that development is accomplished, the traffic must necessarily be slight. The original intention is liable to be lost sight of, when, after a railway is finished, traffic sufficient to pay for the interest on its cost is not immediately forthcoming. In order to give you some sort of idea as to whether the cost has been excessive or not it will be well to have a brief and general description of what the enterprise really comprises. The length of the railway is 22 miles between the Buffer Stop at Kowloon and the Bridge over the River at Lowu River at Lowu. At this end there is a Reclamation 41 acres in area extending between the Deep Sea Frontage known as Blackhead's the purchase of which is also included in the capital cost of the Railway and the new Gascoigne Road at Hung Hom. Along the frontage of this there will be room for three Deep Sea Berths where ships can come alongside jetties. The Railway has had to provide for extensions of Public Works which the growing nature of Kowloon and Hung Hom and Yaumati demands. For 16 miles the railway runs through deep cuttings and on high banks where no other route was practically possible and above all 1¾ miles of the alignment is in tunnel, an abnormally high proportion. In addition to this the capital account has had to bear interest during construction, home charges and loss of exchange which together amount to close on $800,000. The cost of tunnelling has been very moderate and of this there can be no sort of question. The cost of the reclamation works out to about 50 cents a square foot and compares well with the prices we have had to pay for land adjacent. The rates for earthwork and concrete are distinctly reasonable and the rolling stock has been supplied at a low tender. Taking then the cost of the enterprise when it is finished at $12,000,000, let us first deduct therefrom the cost of that portion of the reclamation which does not form part of the Railway proper about $600,000 (I am speaking in general terms). The cost of the deep sea berth at Blackhead's also about $600,000. The cost of the tunnels $3,700,000. The proportion of interest and home charges due to the above $550,000 and with about $50,000 for a few other items, we get a sum of about $5,500,000 to be subtracted from $12,000,000 which gives $6,500,000 as the cost of 20½ miles of untunelled railway inclusive of workshops and equipment. Now if you were to add another $1,000,000 to this amount you could convert the Kowloon-Canton Railway into a doubled line along these 20½ miles and the cost thereof would work out to about $370,000 per mile as a doubled line of Railway of a very heavy nature. If however you prefer to judge it as a single line and to make due allowance on the $6,500,000 say 25 per cent. because all the cuttings and most of the banks and nearly all the bridges have been built for a double line you will get the cost of the single line of railway at $4,925,000, or $240,268 per mile and I leave it to the *cognocenti* to judge whether this figure compares favourably with the cost of similar work elsewhere. For my part I am sure it does. Too much of your time has I fear been taken up and I will therefore refrain from worrying you with any more figures of traffic possibilities. (Applause.)

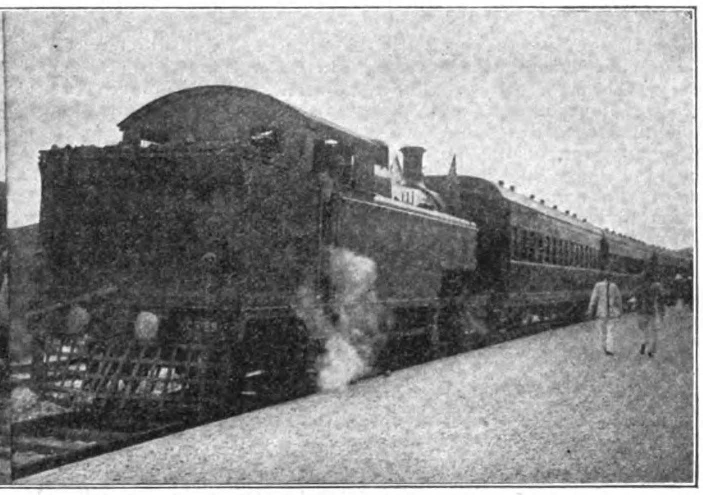
"So I will now ask His Excellency to declare the British Section of the Kowloon-Canton Railway open for general traffic." (Applause.)

His Excellency, Sir Henry May, said:

"Your Excellencies, Ladies and Gentlemen, Mr. Lindsey has briefly sketched the history of the railway which I am asked to open to-day. I endorse his hope that the day is not far off when the British and Chinese Sections of this railway will be linked together and the line thrown open to the public for through traffic between Kowloon and Canton. Then will be the time to dwell on the benefits which this line will bring to us by linking our Colony to the neighbouring province of Kuangtung and by forming a part of the gigantic railroad which we hope will soon extend without a break from Kowloon to Calais. But, as to-day we celebrate the opening to public traffic of the British Section only, I propose to confine myself entirely to a brief consideration of the advantages which, I confidently expect, will result from the construction of the 22 miles of railroad now completed. This railway will serve to introduce many of you to district beyond the Kowloon range of hills. That district has only been under British rule for a little over 11 years. Its development on the broad and easy lines traced by that wise and farseeing administrator, Sir Henry Blake, assisted by Mr. (now Sir) James Stewart-Lockhart, who seems to have a genius for organising economical administration, has been somewhat striking. It was necessary in the first place to incur somewhat heavy expenditure on police protection in order to make the *Pax Britannica* respected. This Sir Henry Blake rightly regarded as our first duty. Next it was necessary to survey the country and to investigate title to land, settle them and draw up an accurate rent roll. In this work Mr. C. McI. Messer and Mr. C. Clementi rendered invaluable service. To the erudite knowledge of the latter of the Chinese law of land tenure the Colony owes the fact that fraudulent claims to large and valuable areas of foreshore extending from Lyeemun to Kowloon City and from Shamshuipo to Laichikok were disposed of in the Courts, the land being rescued for the Colony to the great benefit of the taxpayers. The number of holdings demarcated and adjudicated upon in the mainland district was 281,352. Simultaneously the work of administration had to be organised. It has been carried on in an economical manner by two officers at Tai Po, the Magistrate (now called District Officer) and the Assistant District Officer. In the former capacity the district has been fortunate in enjoying the services of Mr. W. R. Hallifax, who has displayed great tact without loss of the necessary firmness in handling the population. The latter post has of recent years been ably filled by Mr. S. B. C. Ross. The principal source of expenditure has been, and still is, the maintenance of an adequate police force. Much of the success that has been achieved by the administration is due to the efficiency and tact of the police, whose presence the inhabitants now thoroughly understand and appreciate. In the suppression of robberies by gangs of armed men belonging partly to the district and partly to the contiguous Chinese Territory, the police have benefited by the friendly and effective co-operation of the Chinese officials across the border. The revenue collected last year in the mainland district you are about to visit from Land Tax, or Crown Rent as we call it, was $81,000, and from all sources, including opium and liquor, $158,000. This much more than covers the cost of administration and leaves a surplus for the development of the country. But if the development of the district has been satisfactory up to the present time, I venture to predict that it will be much more rapid and much more pronounced now that it has been made easy of access by means of this railway. The administration will be greatly facilitated, trade will be stimulated and the condition of the inhabitants must be improved by their being brought into close connection with the large market which Hongkong affords. We do not expect that this line by



H. E. SIR HENRY MAY MAKING ADDRESS ON OCCASION OF OPENING OF BRITISH SECTION



PASSENGER TRAIN. CARS CONSTRUCTED AT THE HONGKONG AND WHAMPOA DOCK CO.'S SHOPS

itself will pay remunerative interest on the large capital spent on its construction. But the indirect beneficial results to the Colony will, I think, be such as to recompense it in some measure for the large expenditure that has been incurred. All of us, Europeans and Chinese alike, have a feeling how an historic Kowloon tiger would feel if he were caged. We want more elbow room. We need more frequent change of environment. This railway will enable some of us to take short holidays from our work—and from each other. (Laughter.) Others again will prefer to lead the simple life in the country, visiting Hongkong daily for their business. I expect, therefore, to see in course of time a great revolution in the social condition of the Colony. The country to which this railway will introduce you is very beautiful. In the russet garb it assumes in winter, it will remind some of you of your far distant Highlands; the emerald mantle that it dons in summer rivals the emerald dress of comely Erin; the resounding ocean which washes its shores stirs the memories and the hearts of Englishmen. There you may taste of one of the sweetest joys in life—the enjoyment of Nature's beauty. And there too our Chinese citizens may change the restrictions which life in a large city is always subject to for the comparative freedom of a home in the country. This railway will in short bring to the inhabitants of the district, if it does not bring greater riches, it will bring what is better than gold and silver—more enjoyment of life and greater contentment of spirit. To these advantages will succeed a better understanding of the inhabitants of the district now opened to you, and in course of time closer intercourse and more intimate relations with the officials and people of the great Empire on your borders. The work that is this day consummated is an important step in the material improvement of the Colony which Providence has entrusted to our keeping. Let us not in this hour forget the men who have contributed to the work—Sir Matthew Nathan, whose foresight materially assisted in the provision of funds to defray its cost and who initiated the work; Sir Frederick Lugard, under whose able control the work has been carried out; Mr. G. W. Eves, Mr E. S. Lindsey, and their staff of engineers, who have completed a work which is a credit to British engineering. May this undertaking, under the guidance of Almighty Providence, bring to our dearly loved Colony increased prosperity and happiness. With this prayer on my lips I declare the British Section of the Canton Kowloon Railway open for traffic." (Applause.)

VIEW OF LOWU STATION AT THE BOUNDARY LINE BETWEEN BRITISH AND CHINESE TERRITORY AND TERMINAL OF BRITISH SECTION

The British Section of the Kowloon-Canton line connects Hongkong with the Chinese boundary covering a distance of 22 miles while from the boundary to Canton is 89 miles. The concession for the construction of the Kowloon-Canton Railway was granted the British Chinese Corporation in 1898 but no progress was made for years by the concessionaires. In 1905 the American-China Development Company retired from active interest in the construction of the Canton-Hankow Railway and the plans for an extensive terminal at Canton was abandoned. In redeeming the concession, the Chinese were obliged to secure outside assistance and the commercial interests of Hongkong realizing that this was the opportunity to strike a bargain for traffic connection advanced the sum of £350,000. The survey of the British section was at once undertaken and by the end of 1905 two and one-half miles of embankment and a survey for final location were completed and the title of the land for the right of way resumed by the Crown. The first rough estimate of cost for this line was submitted by Mr. Bruce and amounted to $5,053,274 and did not include the provision for workshops buildings, rolling stock, etc. In June, 1907, the Chief Resident Engineer submitted a more carefully prepared estimate which footed up $8,003,642, but did not include provision for rolling stock or workshops, etc. In December of the same year an amended estimate amounting to $9,860,283.83 was submitted that included the cost of rolling stock and of the resumption of the deep sea wharf near Blackhead Point but did not provide for workshops or for terminal site. In May, 1909, another revised estimate was submitted which amounted to $11,004,128 which covered all items with the exception of sufficient funds to cover all of the resumption charges.

The last estimates submitted in 1910 included all items to cover the completion of the road and amounted to $12,371,495.46, the excess of $1,367,367.46 over the 1909 estimate included one large item of $913,922.67 covering interest and loss of exchange not previously referred to. The balance of the increase in cost is found in the following items:

Estimates for earthwork, $319,403.95; tunnels, $311,320.50; roads, $35,220 16; major bridges, $138,729.05; minor bridges, $10,522.19; culverts, $10,522.19; boundary fencing, $7,302.23; telegraphy, $3,060.75; home charges, $50,000 amounting in all to $875,558.83.

Savings on buildings, $139,998.47 and construction of plant, $132,115.57 with anticipated sales for the year of $150,000 in all $420,114.04, reduced the total increase to $453,444.79.

It might be said that the difference in the several estimates has been subject for much discussion and not a little criticism from those not conversant with the conditions under which the first and second estimates were made. The difference between Mr. Bruce's estimate of $5,053,274 and the last estimate of $12,371,-495.46 amounting to $7,318,221.46, however, has been well accounted for and the expenditure will no doubt be fully justified when the benefits of the line are realized. As explained previously the 1905 estimate was in the rough and made no provision for rollingstock, workshops, etc. Indeed, the first real estimate based on the initial work was that of the Resident Engineer in June, 1907, which amounted to $8,003,642.63.

The difference between that and the last revised 1910 estimate of $12,371,495.46 amounted in all to $4,367,852.83. The increase over the June, 1907, estimate for tunneling alone amounted to $1,607,730.19.

Some idea of the magnitude of this work may be gathered from the following figures:

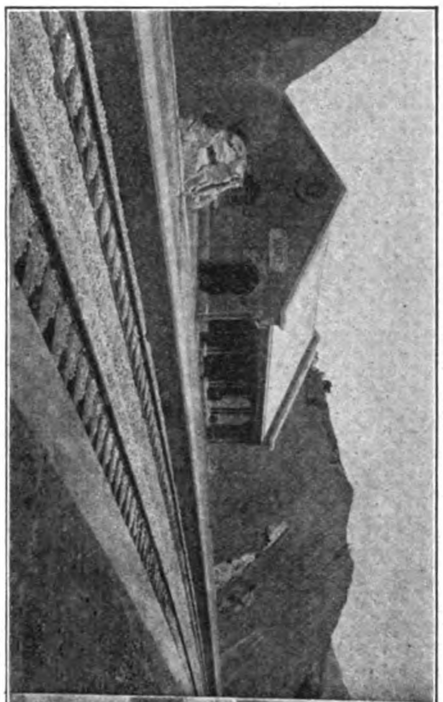
Tunnel No. 1.—150 feet in length cost $507.42 per foot, in all $76,113.16.

Tunnel No. 2, *Beacon Hill.*—7,212 feet in length, at $455.28 per foot, in all $3,283,503.99.

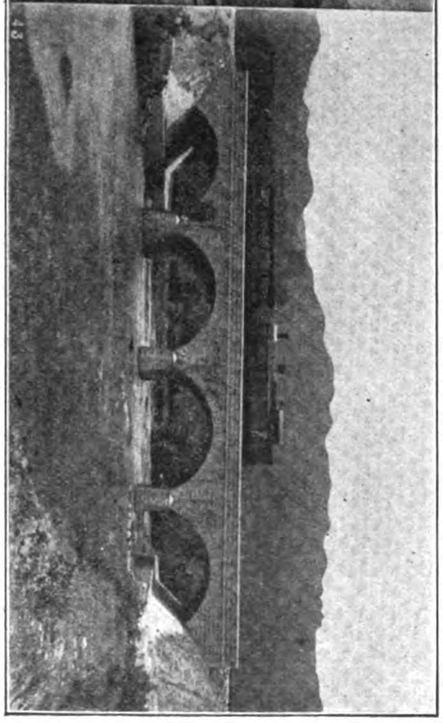
Tunnel No. 3.—329 feet in length at $247.48 per foot, in all $81,420.87.

Tunnel No. 4—170 feet in length, $400.92 a foot, in all $68,156.23.

Tunnel No. 5.—923 feet, $327.14 a foot, in all $301,950.94.



TYPICAL STATION ON BRITISH SECTION KOWLOON-CANTON RAILWAY



TYPICAL BRIDGE CONSTRUCTION ON THIS LINE

All these tunnels were driven wide enough to accommodate double track with the exception of the Beacon Hill. Two of them were driven through solid rock and the balance through disintegrated granite and solid rock alternating. The arches of these tunnels are all 35 feet.

In the tunnel work great difficulty was met in securing labor, and the formation was of such a character that the engineers were often confronted with new and embarrassing conditions that could not be anticipated. It became necessary to import labor from India and, later, Chinese returned from South Africa were secured. Italian contractors undertook parts of this work. Compressed air plants were installed for pumping and drilling and special railways were laid to carry off the dirt and rock to the embankments and fills.

The items making another large increase in the 1910 estimate compared with June, 1910, have reference to shops, rolling stock, etc., interest and exchange, etc., and amounting to ₱1,474,306.20, were not included in any former estimate.

The cost of acquiring the necessary land exceeded the June, 1907, estimate by $1,056,179.20, but this was largely due to the vagueness of the original plans for land resumption. No provision was made for terminal site at that time.

The other important items where increases were necessary are: Earthwork, $187,075.30; bridges and culverts, $161,656.29; buildings, machinery, etc., $88,633.75; general charges, $65,000.85, and roads, $37,700.

The principal saving included $132,182.47 on constructions and $36,882.75 on ballast and permanent way. The following comparative table issued March 7, 1910, is of special interest at this time:

KOWLOON-CANTON RAILWAY

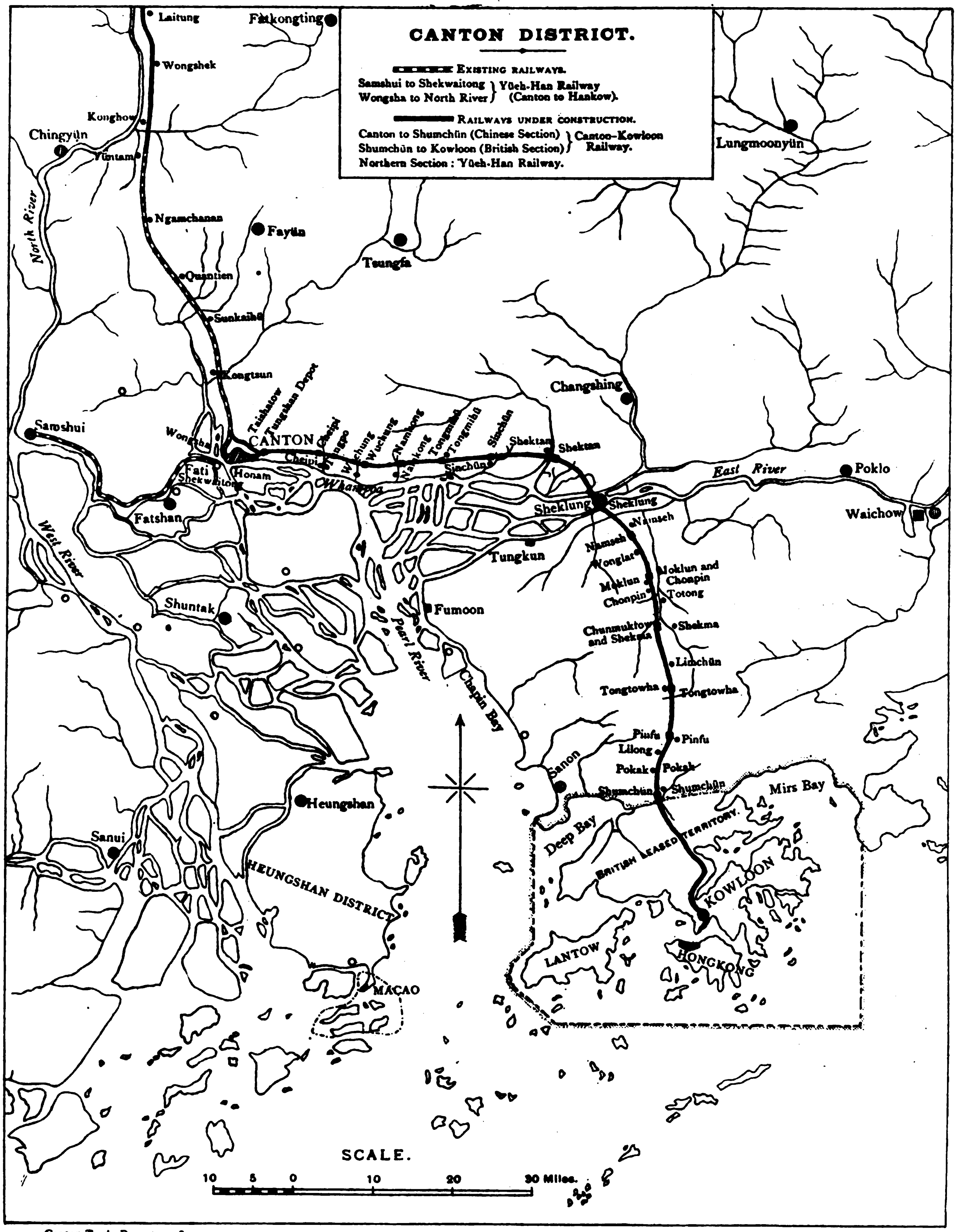
(BRITISH SECTION)

Main Head.	Sub-Head.	Estimate of June, 1907.	Revised Estimate of 1909.	Further Revised Estimate of 1910.	Variations between Estimates of 1909 & 1910.	Expenditure to 31st Dec., 1909.	Anticipated Expenditure to the end of Construction.	Grand Total.
I.—Survey	......	$45,000.00	$42,277.65	$42,277.65	......	$42,277.65	......	$42,277.65
II.—Land	......	139,700.00	1,195,879.20	1,195,879.20	......	762,863.55	$433,015.65	1,195,879.20
III.—Formation	(a) Earthwork	2,400,504.70	2,268,176.05	2,587,580.00	$319,403.95	2,047,323.04	540,256.96	2,587,580.00
	(b) Tunnels	2,203,415.00	3,499,824.69	3,811,145.19	311,320.50	3,480,248.19	330,897.00	3,811,145.19
	(c) Roads	82,500.00	84,979.84	120,200.00	35,220.16	4,957.63	115,242.37	120,200.00
IV.—Bridges	(a) Major	585,911.57	677,766.36	816,495.41	138,729.05	648,816.92	167,678.49	816,495.41
	(b) Minor	422,718.11	339,604.28	350,126.47	10,522.19	321,793.12	28,333.35	350,126.47
	(c) Culverts	68,882.00	65,243.86	72,546.09	7,302.23	68,721.56	3,824.53	72,546.09
V.—Fencing	(a) Boundaries	31,813.00	39,999.45	39,999.45	......	996.45	39,003.00	39,999.45
	(b) Signs	396.00	400.00	400.00	......	......	400.00	400.00
VI.—Telegraph	......	26,864.00	26,971.42	30,032.17	3,060.75	19,807.47	10,224.70	30,032.17
VII.—Track	(a) Ballast	154,110.00	132,066.54	132,066.54	......	40,093.10	91,973.44	132,066.54
	(b) Permanent Way	747,032.00	732,192.71	732,192.71	......	524,985.83	207,206.88	732,192 71
VIII.—Stations & Buildings	(a) Buildings	223,396.25	449,998.47	310,000.00	139,998.47	58,647.01	251,352.99	310,000.00
	(b) Machinery	39,560.00	40,000.00	40,000.00	......	......	40,000.00	40,000.00
	(c) Furniture	3,410.00	5,000.00	5,000.00	......	......	5,000.00	5,000.00
	(d) Workshops	......	60,000.00	60,000.00	......	......	60,000.00	60,000.00
IX.—Plant	(a) Constructions	234,067.00	234,000.10	101,884.53	132,115.57	505,048.23	403,163.70	101,884.53
	(b) Loco., Tools and Plant	......	50,000.00	50,000.00	......	......	50,000.00	50,000.00
	(c) C. & W. Plant	......	10,000.00	10,000.00	......	......	10,000.00	10,000.00
	(d) Engineering	......	......	......	......	......	......	......
	(e) Loco., Rolling Stock	......	88,000.00	88,000.00	......	......	88,000.00	88,000.00
	(f) C. & W. Rolling Stock	......	309,540.00	309,540.00	......	2,350.00	307,190.00	309,540.00
X.—General Charges	(1) Salaries	388,148.20	399,720.43	399,720.43	......	337,605.63	62,114.80	399,720.43
(a)	(2) Quarters & Offices	38,970.80	68,495.13	68,495.13	......	67,691.76	803.37	68,495.13
	(3) Furniture	10,956.00	11,639.61	11,639.61	......	10,981 03	658.58	11,639.61
	(4) Office Expenses	13,068.00	32,710.93	32,710.93	......	27,893.26	4,817.67	32,710.93
	(5) Medical	20,020.00	22,319.46	22,319.46	......	20,484.70	1,834.76	22,319.46
	(6) Home Charges	123,200.00	74,478.29	124,478.29	50,000.00	89,633.22	34,845.07	124,478.29
	(7) Interest	......	......	713,922.67	713,922.67	251,625.09	462,297.58	713,922.67
	(8) Exchange	......	......	200,000.00	200,000,00	63,229.01	136,770.99	200,000.00
(b)	Accounts	......	42,843.53	42,843.53	......	29,128.27	13,715.26	42,843.53
(c)	Stores	......	......	......	......	190,297.50	190,297.50	......
Anticipated Credit	By Sales	......	......	150,000.00	150,000.00	......	150,000.00	150,000.00
		$ 8,003,642.63	$11,004,128.00	$12,371,495.46	$ 1,367,367.46	$ 9,617,499.22	$ 2,753,996.24	$12,371,495.46

The new rolling stock recently arrived in the colony included two tank engines, six open bogie cars, six covered bogie cars, twenty-six covered four-wheeled cars, ten open four-wheeled cars, and two four-wheeled freight brake-vans. The Hongkong & Whampoa Dock Co., Limited, secured the contract for the erection of the passenger cars and the work was delayed somewhat by the tardy arrival of the steel frame work.

The Hongkong Government considered the advisability of abandoning the railway workshops and placing the work with the large local engineering shops, before the 1910 estimates were adopted, and decided that it would be more economical for the railway to have its own shops. This question was reopened and made the subject of some discussion at a recent meeting of the legislature. Mr. Hewitt, representing the unofficial members, in the course of a speech criticizing the increase in certain estimates with special reference to the railways, said:

"There is only one more matter to which I will refer, the Kowloon Railway. Here again is a question concerning which we would like to have had further information. Again an estimate of eight millions has swelled up 50 per cent., the actual expenditure to date being nearly twelve million dollars. We would ask to be informed how and from whom the material was purchased; if in the open market and at cheapest prices compatible with good material? Has any delay in opening the line been caused by delay in the arrival of the rolling stock; and if so, will the loss thus incurred be made good by those responsible? Touching the workshops, which have not yet been set up, it seems on further consideration a moot point whether a railway of only some 22 miles is justified in incurring the heavy capital expenditure and



Canton Trade Report, 1908.

the heavy annual cost of running its own workshops. The greater part of the year the staff and machinery must be idle or very indifferently employed. We have two thorough, well appointed dockyards, in addition to the Naval Yard, each fitted with up-to-date machinery and a highly qualified staff. Why should not the Government effect the great saving which must result by abandoning the proposal of having their own workshops, and give these two institutions an opportunity of sharing work which they would no doubt be very glad to secure, and could efficiently perform? If the machinery has already been contracted for this could no doubt be disposed of elsewhere, particularly in view of the great expansions of railway enterprise now being carried out in the Far East. Further nformation as to the site of the Kowloon Station would also be of great interest. Sir Matthew Nathan proposed to make the station on the eastern side of the peninsula, and for that purpose spent a considerable sum in resuming the site. Later, we understand, it was considered best by the Government advisers to place the station around the corner on the southern side, and for this purpose another large sum of money was spent in acquiring the necessary land. Now, however, it seems the station is to be on the site originally selected by Sir Matthew Nathan, thus fully justifying his decision. It appears to us that the ratepayers are entitled to know how much was paid for these various sites; to what use the Government intend putting the new abandoned site of the station and whether there is reasonable ground for believing that a proper return on the money thus invested can be secured."

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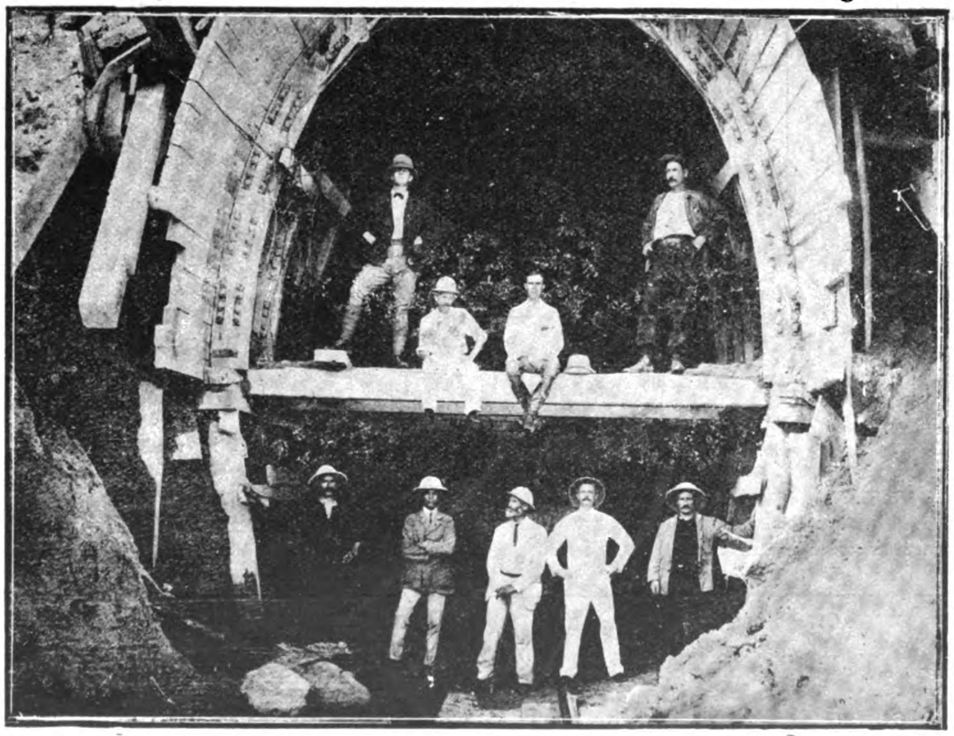
KOWLOON-CANTON RAILWAY, BRITISH SECTION, THE ENGINEERING STAFF

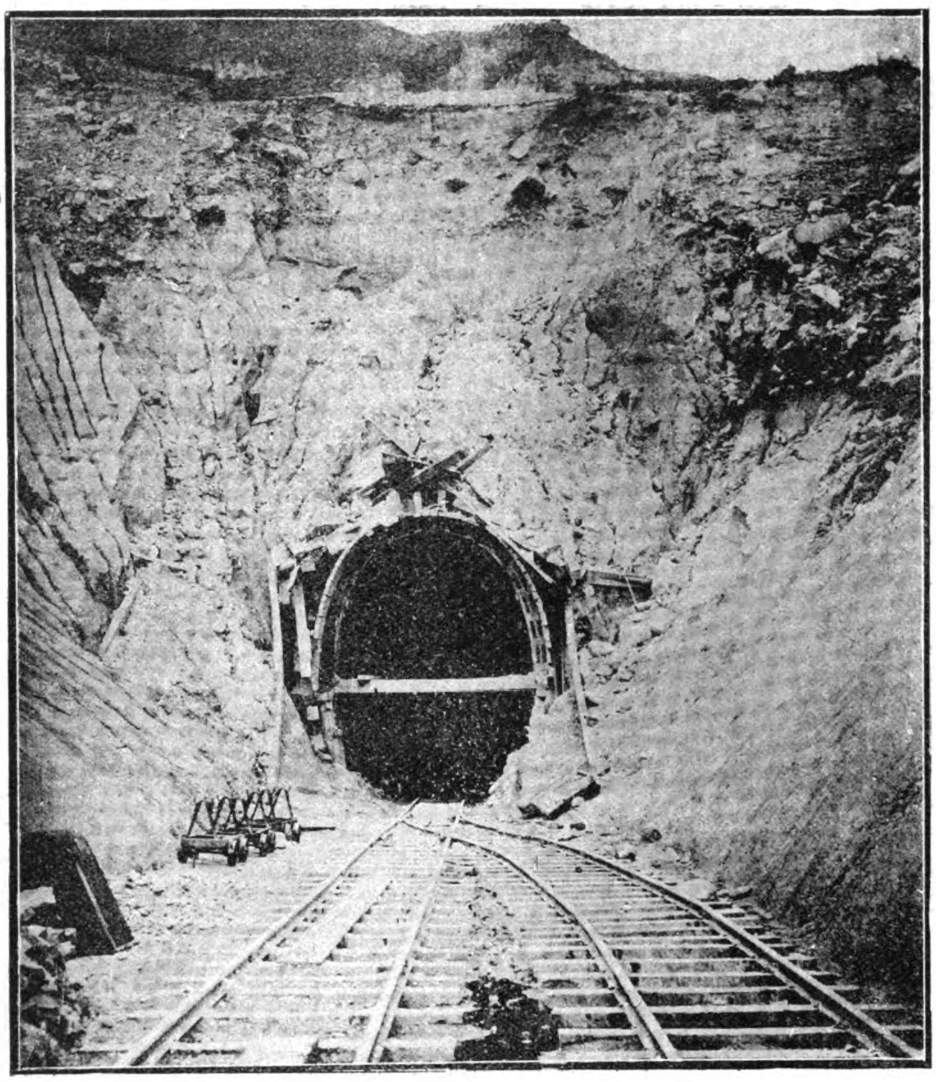


KOWLOON-CANTON RAILWAY, BRITISH SECTION, ENGINEERING STAFF AT TUNNEL HEAD

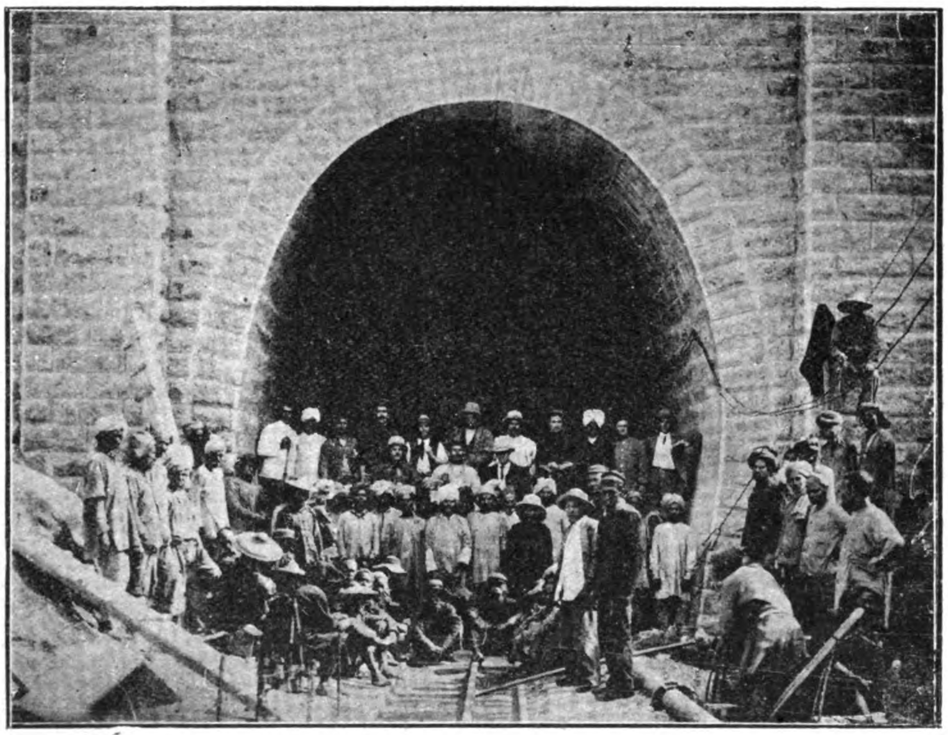
In reply His Excellency said:

"The hon. member made some reference to the railway estimates. I would remind him that in the estimates before us there is no estimate for railway construction. A vote was taken by resolution of this Council early in the year for the expenditure necessary in the current year, and a vote will be taken early next year for the remaining expenditure required to completion. These estimates are only concerned with the open line and stock I may perhaps mention, with reference to his suggestion that workshops were not necessary to the railway, that the Government did not overlook the possibility of dispensing with workshops and getting their work done in some of the engineering yards of the Colony, but after mature consideration they decided that it would be more economical to have their own workshops The hon. member referred to the change in the site of the terminal station. His information on the subject is not quite correct. The site chosen by Sir Matthew Nathan is not the site that has been now fixed upon. Sir Matthew Nathan acquired the land known as Blackhead's Point for the double purpose of forming a railway station and deep sea wharf. There had been a considerable difference of opinion as to where the terminal station should be placed. As I have said, Sir Matthew Nathan wanted to place it at Blackhead's Point. Then it was decided to place it at Tsim Cha Tsoi, and land was acquired for that purpose. Then on further consideration it was decided that to save using that land for railway purposes it would be more economical to revert to a site which was suggested before Sir Matthew Nathan decided on Blackhead's Point, and that is somewhere in the neighbourhood of Gascoyne Road. It is the intention to place the terminal station there, and for the present at any rate to have a flag station at Tsim Cha Tsoi The result will be that the land which has been acquired at considerable cost at Tsim Cha Tsoi will be available for the Government to dispose of otherwise. I do not think, gentlemen, that there is any point I have left uncovered, but if there is any further information hon. members require they will have every opportunity of obtaining it in Finance Committee."

Provision for a ferry service between the city of Victoria and the railway pier at Kowloon is given attention in a recent issue of the Government Gazette in the form of an advertisement for tenders with respect to the lease of a site and the construction of a pier opposite Ice House Street. This pier is to have minimum dimensions



KOWLOON-CANTON RAILWAY, BRITISH SECTION, ENTRANCE TO BEACON HILL TUNNEL



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KOWLOON-CANTON RAILWAY, BRITISH SECTION, FINISHED ENTRANCE TO BEACON HILL TUNNEL

of 150 feet by 50 feet to be built within twelve months, and to maintain the present pier during the construction of the new one.

Upon the completion of the line to Canton and of the railway pier at Kowloon a ferry service is to be maintained that will conform to the time table inaugurated, carrying passengers and mails under proper bonds to insure the satisfactory performance of the terms of the contract. The concessionaire will have the sole right to the railway ferry service from any or all of the three points in Victoria, viz: The pier opposite Ice House Street, a pier in the Central or Western District, and a pier in the Eastern District, or may combine the service from the Ice House Street and Central or Western pier instead of a direct service from each pier to the Kowloon railway pier.

Three properly equipped steamers will be the maximum number required for each service. The capacity of these steamers for the pier opposite Ice House Street and the Western or Central pier must have a minimum carrying capacity of 300 passengers and for the Eastern pier a capacity of 150 passengers.

The fares are fixed at adult first class, 15 cents, half fare 5 cents; second class, 3 cents; third class, 2 cents, day service, and 3 cents, night service.

The inauguration of the service will not be required until such time the government is satisfied that the revenue will cover expenses, etc.

It is expected that the Chinese section will be opened to Canton by August next year. Work has been progressing more favorably during the last year and approximately 40 miles from Canton are now open.

With the opening of the British section the construction on the Sanchun end will be expedited by the increased transportation facilities afforded for the forwarding of material. Work trains may proceed from Sanchun as the line is built from that end. The work on the terminal station at Tai Sha Tan has progressed satisfactorily and other building construction is well up to the general progress made.

The large number of bridges in the central division between a point 29 miles from Sanchu and the end of the line open from Canton has involved great expense and much time. Between the bridges, however, construction work is well up and their completion at an early date will bring the open line from Canton to the 50 miles point. By that time it is expected that the 29 miles from the British boundary will have been completed and there is prospect that the time set for the opening, next year, may be anticipated by a couple of months.

The time table put in force, October 1, on the British Section provides trains each way on week days only; one down train on Saturdays and, Sundays and a down train running Mondays, Tuesdays and Wednesdays, while in addition to the two up trains, there is one that covers the line every day. This arrangement makes in all seven trains initiated the first week o this month. The time table published in the Government Gazette follows:

DOWN TRAINS.

No. of Train.	1 a.m.	3 a.m.	5 p.m.	7 p.m.
Kowloon, Departure.....	...	8:30	2:30	4:00
Hung Hom, Arrival.....	...	8:33	2:32	4:03
Hung Hom, Departure..	5:25	8:38	2:35	4:08
Yaumati, Arrival.......	5:31	8:44	2:39	4:14
Yaumati, Departure.....	5:35	8:49	2:40	4:19
Shatin, Arrival.........	5:47	9:01	2:52	4:31
Shatin, Departure.......	5:48	9:06	2:53	4:36
Taipo, Arrival..........	:600	9:18	3:05	4:48
Taipo, Departure.......	6:05	9:30	3:07	4:58
Fan Ling, Arrival.......	6:15	9:42	3:19	5:10
Fan Ling, Departure....	6:20	9:47	3:20	5:15
Lowu, Arrival..........	6:30	9:58	3:35	5:24

No. 1 Train runs on Week days only.

No. 3. Train runs on Week days only.

No. 5 Train runs on Saturdays and Sundays only.

No. 7 Train runs on Mondays, Tuesdays, and Fridays, but will not run on Saturdays and Sundays.

UP TRAINS.

No. of Train	2 a.m.	4 a.m.	6 p m
Lowu, Departure.........	6:40	11:00	5 35
Fan Ling, Arrival.........	6:49	11:09	5:45
Fan L'ng, Departure......	6:54	11:14	5 46
Taipo, Arrival............	7:06	11:26	5:58
Taipo, Departure.........	7.16	11:36	6:08
Shatn, Arrival...........	7:28	11:48	6:02
Shatin, Departure........	7:33	11:53	6:23
Yaumati, Arrival.........	7:45	12:05	6:35
Yaumati, Departure.......	7:50	12:10	6:39
Hung Hom, Arrival.......	7:55	12:15	6:44
Hung Hom. Departure.....	8:00	12:20	6:45
Kowloon, Arrival.........	8:03	12:23	6:47

Nos. 2 and 4 trains run on week days only

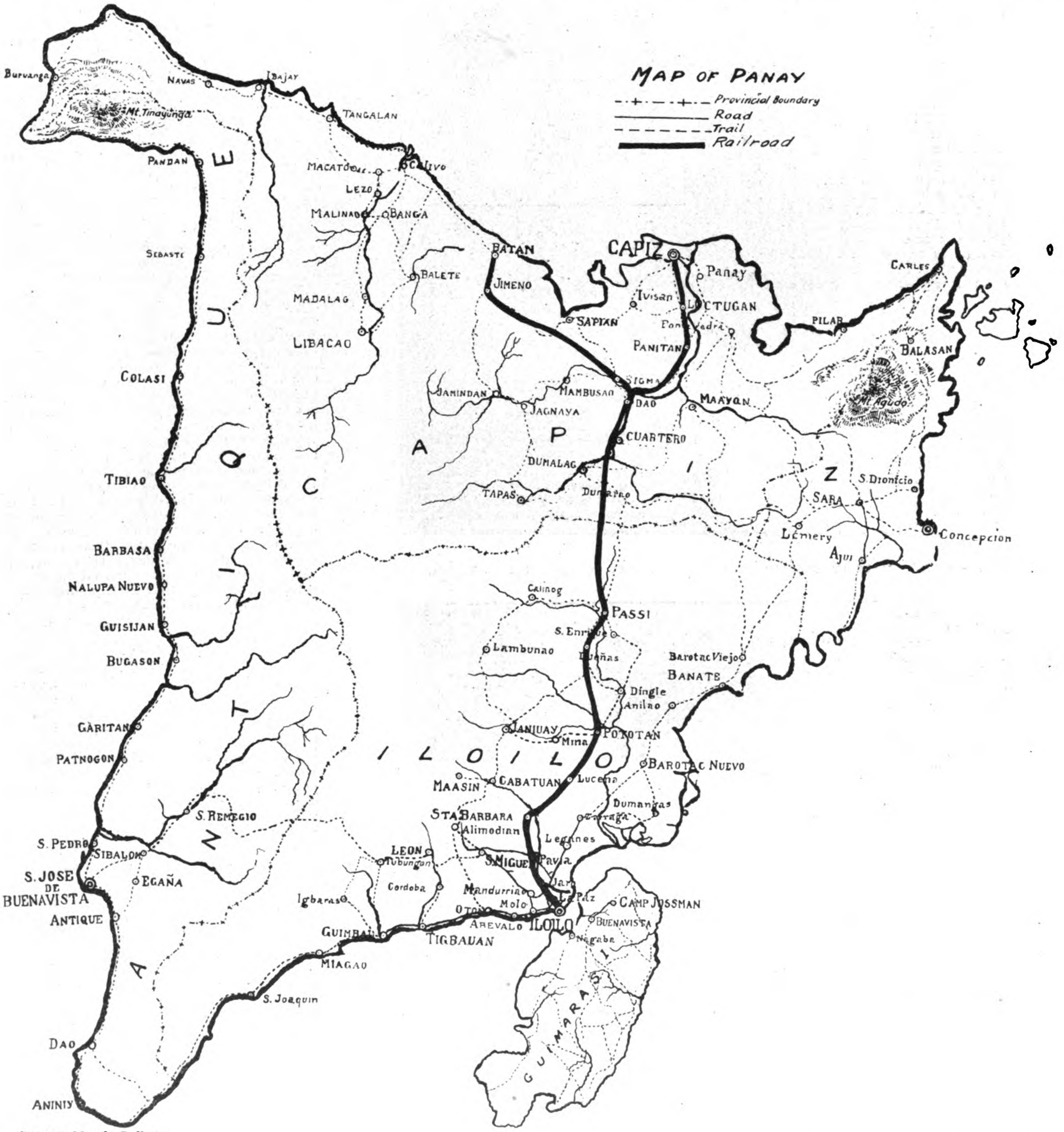
No. 6 train runs on week days and Sundays

Opening of the Iloilo-Capiz Line of the Philippine Railway Co.

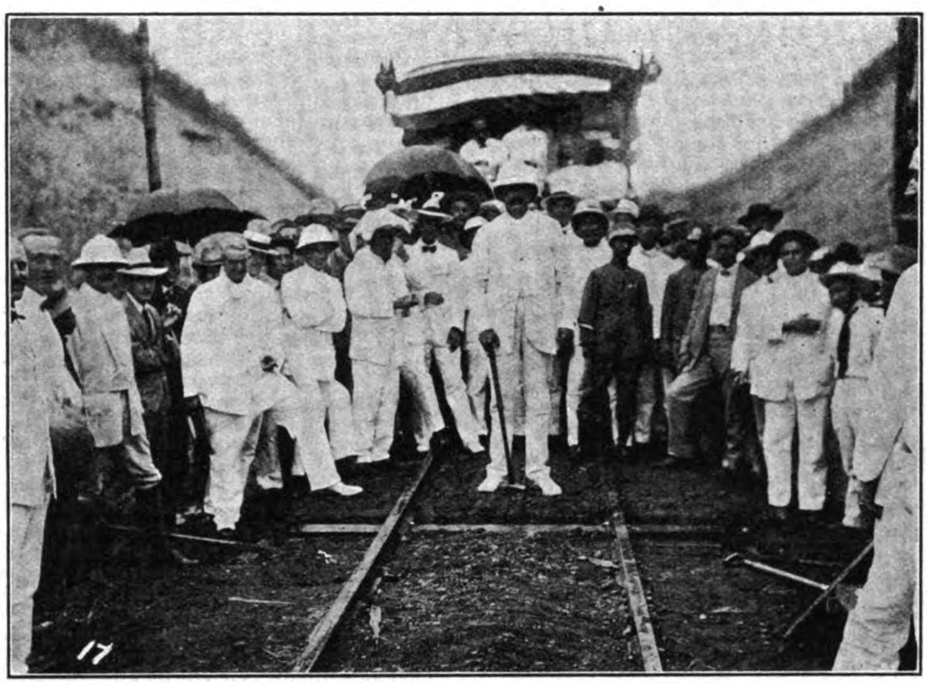
August 28, 1910, marked the beginning of a new era in the history of the development of the rich resources of the island of Panay. It was the occasion of the formal opening of the through line running across the fertile island and connecting the cities of Iloilo and Capiz, by Secretary of War Dickinson, assisted by Governor General W. Cameron Forbes, Governor Altavas of the province of Capiz, and Governor Ruperto Montinola of the province of Iloilo.

The last pile was driven on August 11 at bridge No. 607 between Dao and Calaan, and it was at the approach to this bridge on August 28 that the four golden spikes were driven that inaugurated the railway. To be exact, the rail ends connected at kilometer 96 from Iloilo and kilometer 20.4 from Capiz, the total length of the line being 116.4 kilometers.

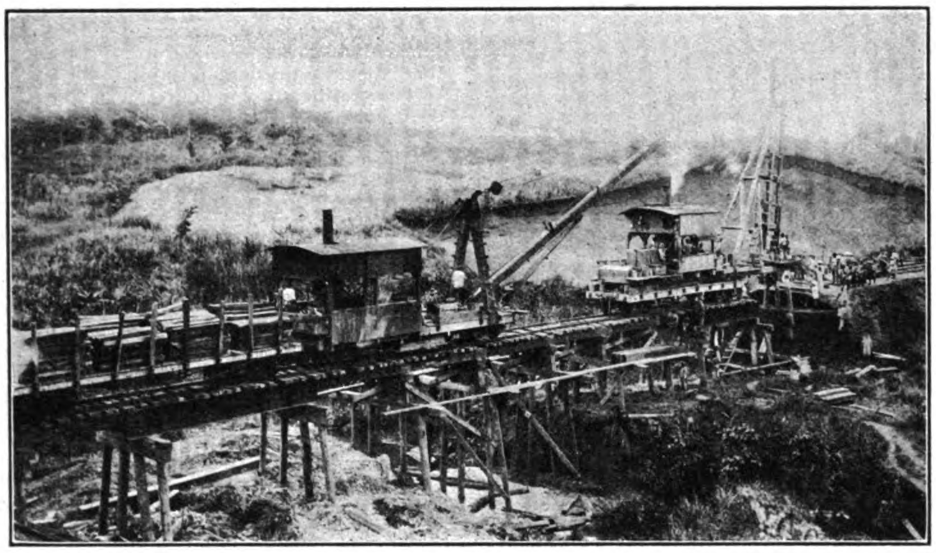
A special train of seven coaches, including a parlor car, first class and second class coaches with baggage car, hauled by a Baldwin locomotive, carried the Secretary of War and party from Iloilo. Secretary Dickinson was accompanied by General Clarence R. Edwards, Chief of the Bureau of Insular Affairs, and Governor General Forbes. Governors Altavas and Montinola joined them at Iloilo. Among the officials of the Philippine Railway Co. present were Mr. W. B. Poland, Vice-President and Chief Engineer; Mr. Alexander Strausz, jr., Auditor; and Mr. Edwin B. Bruce, General Attorney.



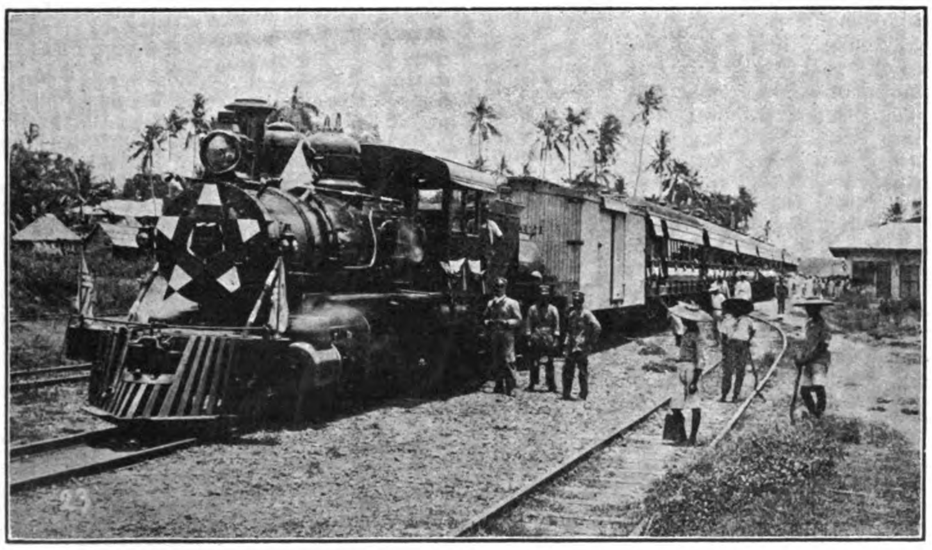
Courtesy Manila Bulletin.



SECRETARY OF WAR DICKINSON DRIVING THE LAST SPIKE IN THE PANAY RAILWAY



DRIVING THE LAST PILE AT BRIDGE 607, WHERE CEREMONY TOOK PLACE



SECRETARY OF WAR'S SPECIAL TRAIN AT POTOTAN ON THE PANAY LINE

The first spike was handed Governor General Forbes, who on behalf of the Insular Government initiated the ceremony, and was followed by Governors Altavas and Montinola, whose spikes were driven to place the seal of their approval on the line that bound their respective provinces together. The fourth spike was driven by the Secretary of War, who declared the road formally opened to traffic.

The party then proceeded to Capiz, where a banquet was spread.

In welcoming the Secretary of War to Capiz province, Governor José Altavas said in part:

"This day is doubly memorable because of two important events,—the visit of the official representative of the sovereign country and the inauguration of the railway from Capiz to Iloilo. If the first is important on account of the fact that the Filipino people expect from this visit positive benefits, no less important is the second event, which solves the problem of transportation between the sister provinces of Panay, and it is hoped will initiate an era of prosperity. We also extend our welcome to the Honorable Governor Montinola of Iloilo and his distinguished party from our sister province. I hope that this meeting in this town, which is a true representation of the Panayan people, will be an earnest of our future union." Other speakers followed and among them Governor General Forbes, who said:

"We have today opened a railroad between Capiz and Iloilo. This places upon every person in the provinces of Iloilo and Capiz the duty of making the railroad a success, to justify the government in having assumed the burden of having to pay interest on the immense amount of money which has been spent here in the construction of this line, in order that the companies that have constructed railroads in these islands may be tempted to build other lines and extend their operations in such a way as to bring the benefits that will surely follow, to more people.

"The future of railways in the Visayan Islands is today based on the measure of success which shall be found here in these two provinces. As soon as the success comes which I feel confident will attend the construction of this line, other lines, I am sure, will follow, and I believe that the construction of these lines will be a bond between the different races and the different parts of the Philippine Islands, until all of us will see the day when we have a people in these islands with one common language, with common interests and with common ideals."

The Secretary of War was then introduced and, after referring to the value of railways in opening up and developing a country, illustrated his point by the history of western development on continental America. Continuing he said:

"Your prosperity and the prosperity of the railroad company are bound to go hand in hand. You cannot be prosperous without its being prosperous, and it cannot be prosperous unless you are prosperous. Therefore, there ought to be that wholesome co-operation between the people of the country and the railroad which will bring the country as rapidly as possible to its fullest development.

"There was a time in the history of the American people when in their anxiety to get railroads, improvident powers were granted to them, and the railroads forgot that they were public servants, charged with public duties, and got into an attitude which brought about great hostility at times between certain of the railroads and certain sections of that country. Profiting by that experience, those who drew your railroad laws have guarded against any such possibility, and therefore there is no reason why there should be distrust between the railroad company and the people of the Philippine Islands. Your laws have been so carefully framed that there is no possibility, even if the railroads should attempt to do it, for them to arrogate any dominancy over the people of this country. You do need in this country capital for development. That your people

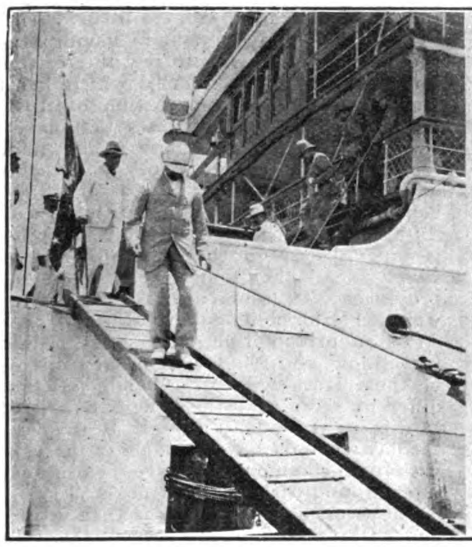
VISIT OF AMERICA'S SECRETARY OF WAR TO THE ORIENT

Great significance is attached to the recent visit of the Honorable J. M. Dickinson to the Philippines on official business connected with the dependency, by Americans in the Archipelago while not a little interest has been taken throughout the East in his short sojourn at Tokyo, his welcome at Peking and his return journey through Russia.

It is not often that a cabinet officer of the United States finds time during his tenure of office to enjoy a tour of the globe, but Secretary Taft established the precedent and it was only natural that the most distinguished member of his cabinet should follow his example. And indeed, in Tokyo as in Peking, we find Mr. Dickinson a strong supporter of President Taft's policy as outlined in the latter famous Shanghai speech.

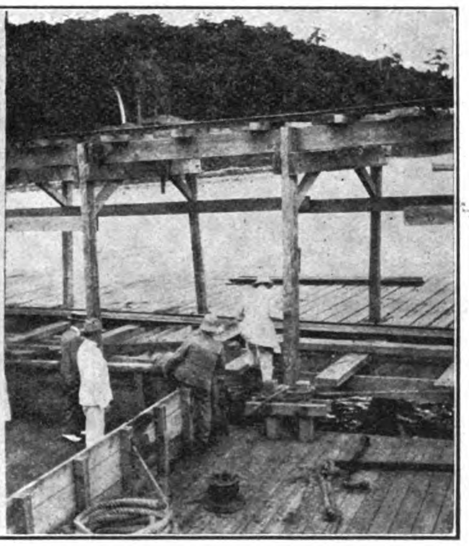
Courtesy R. D. Fergusson, Esq., Chief Translating Division.

PROCESSION OF MORO CHIEFS IN HONOR OF SECRETARY DICKINSON AT ZAMBOANGA



Courtesy R. D. Fergusson, Esq., Chief Translating Division.

SECRETARY DICKINSON AND GOVERNOR GENERAL FORBES GOING ASHORE AT ZAMBOANGA



INVESTIGATING GOVERNMENT COAL MINES AT BATAN

However, it was in the Philippines where his presence served the great measure of good, especially in removing misapprehension as to America's policy there. He found that a large section of the ignorant population had been misled by a few unscrupulous agitators into the belief that as Secretary of War he was empowered to grant them independence. It took some effort to disabuse the native mind of this idea and to impress it with a realization of the restricted powers of a cabinet officer. No doubt, the small agitator group maliciously misled the people in the hope that serious manifestations of disappointment would follow their disillusionment. The Secretary, however, made a triumphant tour and, to the chagrin of the agitator class, received a general expression of loyalty and appreciation of America's beneficent rule. Even those who were misled to expect independence among the Secretary's baggage, demonstrated that they had a fair apportionment of the saving grace of humor in their appreciation of the ridiculous position of the few unwise agitators when the character of the coup was exposed.

Throughout his tour of the islands the Secretary encouraged all classes to freely express their views; to discuss any feature of administration they believed deserving of criticism and to submit complaints. To all he accorded sympathetic attention and promised the fullest investigation. His attitude throughout was in fullest sympathy with the legitimate aspirations of the people and may best be summed up by quoting a few paragraphs in his last address at a popular banquet in his honor given by the Filipino reception committee as follows:

"Whether fortunately or unfortunately, wisely or unwisely, the American people have entered upon such a career in the East as in the judgment of very many of her people makes it impossible for her to assume any attitude in the future toward the Philippines which will not guarantee their independence of all foreign nations. This necessarily involves, if accompanied with local self-government by the Filipinos, much higher development and governmental capacity than would be necessary for a state of complete isolation. It would also mean the maintenance of such relations between the United States and the Philippine Islands as would insure their not becoming involved in international affairs. Unless the United States should adopt the radical policy of severing all relations with and responsibility for the Philippines, the above considerations and the character of development which they involve cannot be left out of view. It must be borne in mind by those who manifest impatience that while from the very force of inertia a present status in a matter so complicated may continue from year to year, no fundamental change is likely to come about until after the whole question shall have been discussed and considered by the American people, and presented as an issue. That has never been done except in a general way. If the question shall be taken up now for solution, it will, in all probability, looking by the lamp of experience, be one of slow progress. It is complicated and the considerations are so vast that they would demand and probably would receive deliberate consideration. Now I have only gone into this discussion for the purpose of inviting the calm and temperate judgment of those who are asking for immediate independence upon the real character of the problem, and for the further purpose of urging that however loud and insistent the cry for independence may be, no one who has the real welfare of the Philippines at heart will neglect, in grasping at what from the conditions will necessarily be a receding shadow for a long time to come, the real substance, which is the development to the highest degree possible under present conditions of everything that will tend to broaden the foundations for fearing Philippine independence.

"I know full well that all of your political parties have the purpose to achieve independence for the Philippines. I respect this ideal, and if I were a Filipino would sustain it, but I would pray to be guided by that wisdom which would help me to lead my people in the way that would certainly achieve it and would erect it as a stable structure upon foundations that would make it perpetual.

"It involves much more than superficial thinkers imagine. It means a reconstruction of the ideas of government which have been familiar to your people. It involves large social problems."

But it was at Zamboanga, where the inordinate ambition of a clique of political agitators found expression in the form of a bold proposal to turn over the direction of the affairs of Moroland to the Philippine legislature, that a climax was reached and a difficult situation adjusted by the Secretary with a firmness that made a deep and lasting impression upon Moros and Filipinos and inspired greater confidence among the foreign and American pioneers in the future of Mindanao. It will be remembered that for several years the transfer of the control of Moro affairs to the Philippine legislature has been agitated by an ambitious group of Luzon natives and these politicians believed that the hour had arrived with the visit of Secretary Dickinson to bring matters to a focus. This they did at Zamboanga at a public session, there being present a large number of Moro chiefs and local Filipino settlers. The speeches of the Filipinos boldly demanding control were interpreted into English and Moro and as the Christian politicians progressed in

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will have the aptitude and capacity to avail themselves of their opportunities I feel quite confident, from what I have seen in traveling over these Islands.

"While capital should never be put in a position of mastery, on the other hand there should be given every assurance that vested rights will be respected and that people who invest their money will receive fair and just treatment. (Applause.) You have a magnificent country. I have never seen a more beautiful country in my life than that I traveled over in riding from Iloilo to Capiz. (Applause.) Your opportunities, however, for development are restricted, and your men of enlightenment, breadth and foresight should take all proper and wholesome steps to get capital for development to your islands."

outlining their ambition the faces of the Moro chiefs were not good to look upon and it is not improbable that a serious clash would have followed disastrous to the Filipinos had the speeches been made without ample military protection.

The Filipino speakers were followed promptly by several of the Moro chiefs whose unanimous protests were promptly and unequivocal as the following quotations indicate:

Datu Mandi:—"I am here, El Raja Mura Mandi, representing the Moros. Here they are, the whole crowd of them, come to honor the Secretary of War. As I look about, I see far more Moros than the Filipino contingent, and if that is so, that is the reason it is called the Moro Province. (Tremendous applause from the Moros.)

"When first the Americans came here, from the very beginning, whatever they asked me to do I did. I was loyal to them ever. Now I have heard a rumor that we Moros are in the hands of the Filipinos.

"In the Spanish times I was a Datu—(when the Spanish left this became a republic). Then I saw and found out that things did not go well. When a man had two measures of rice one was taken away from him; when a man had two head of cattle one was taken away from him (Applause by the Moros.)

"If the American Government does not want the Moro Province any more they should give it back to us. It belongs to us." (Tremendous applause by the Moros.)

Datu Sacaluran spoke as follows, his remarks being interpreted in English and Spanish:

"I am an old man. I do not want any more trouble. But if it should come to that, that we shall be given over to the Filipinos, I still would fight." (Applause.)

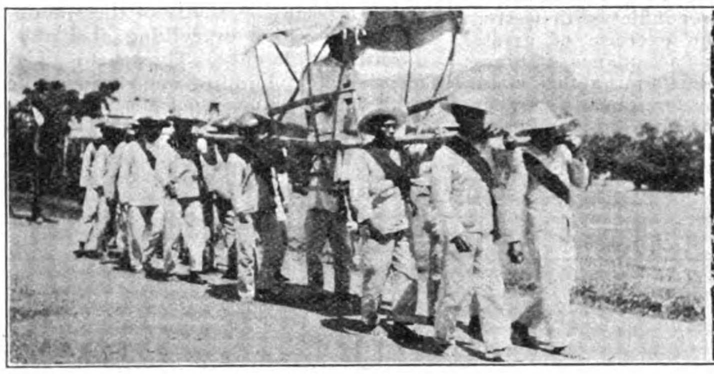
"Ulankaya" Ujaton spoke as follows:

"I am not a civilized man, but I have learned that slavery, killing and stealing is a bad thing. We do it no more. But if after that it should be that we shall be given over to another race, we had better all be hanged." (Applause).

Hadji Nungnui spoke as follows:

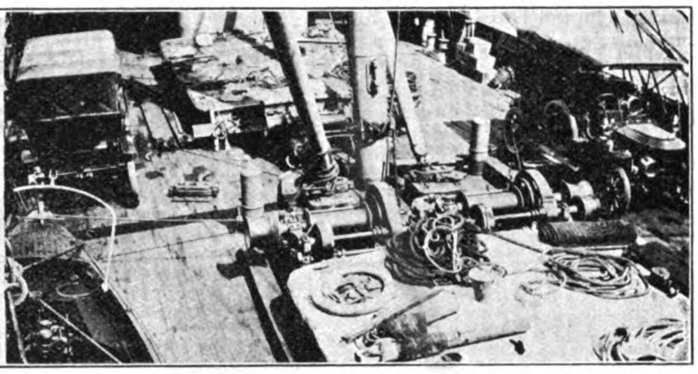
"I want to tell the Secretary of War that I am a Samal. I come from the Samal race. The Samal race,—in former days there was not a worse race than the Samal race; and that was in the olden days. Even since the Spanish times up to now we have learned different.

"The Secretary of War must look the matter in the face. We are a different race; we have a different religion; we are Mohammedans. And if we should be given over to the Filipinos, how much more would they treat us badly, when they treated even the Spanish badly who were their own mothers and their own fathers in generation? How did they treat them? Think about it! Think twice! We far prefer to be in the hands of the Americans, who are father and mother to us now, than to be turned over to another people." (Applause.)

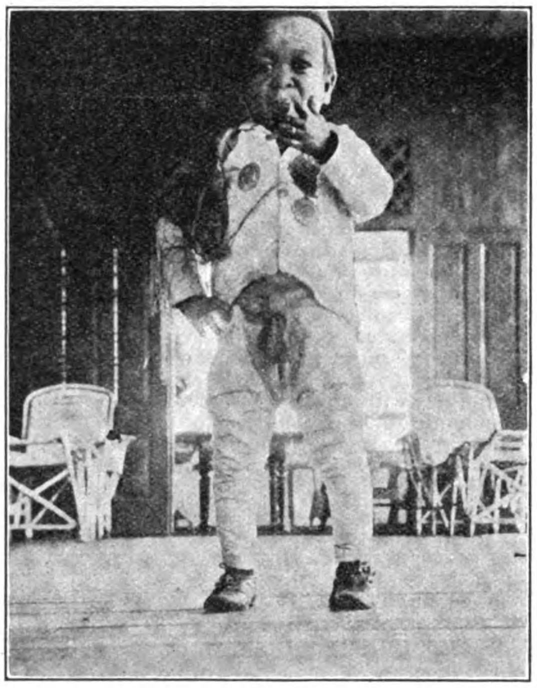


Courtesy R. D. Fergusson, Esq., Chief Translating Division

SECRETARY DICKINSON IN PALANQUIN CARRIED ON SHOULDERS OF NATIVES OF IWAHIG PENAL COLONY

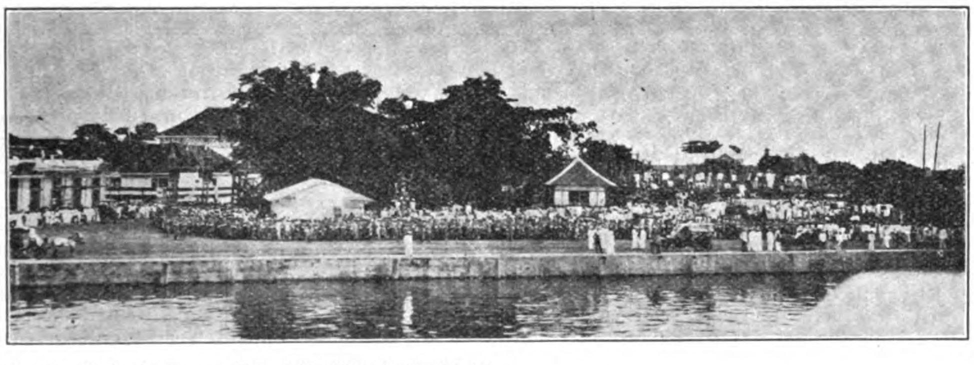


DECK OF THE S. S. RIZAL SHOWING AUTOMOBILES AND MOTOR BOAT USED DURING SECRETARY DICKINSON'S TOUR OF THE PHILIPPINES



Courtesy R. D. Fergusson, Esq., Chief Translating Division

DATTO PANGLIMA DIKI-DIKI, CHIEF OF TRIBE OF MORO DWARFS ON ISLAND OF UBIAN, SULU GROUP



Courtesy R. D. Fergusson, Esq., Chief Translating Division

NEW WATERFRONT AT CEBU WHERE DICKINSON PARTY LANDED.—32 FEET OF WATER ALONGSIDE

An echo of this incident finds expression in the *New York Sun* which indicates that certain sections of America are becoming better informed of late on the status of the islands and that a healthy sentiment is growing in support of the administration policy there. The *Sun* says:

"United States troops have never failed to overwhelm the Moros in battle, and as a people they have been conquered, if not subjugated in that sense in which the term may be used with regard to the Filipinos of Luzon. The Moros have not been tamed, their morals are unregulated, and they remain Mohammedans hating the Christians. Their desire for annexation to the United States when the Filipinos secure independence, as that desire was tumultuously expressed in the presence of General Dickinson at Zamboanga, was merely a crafty rejoinder to the Christian Filipinos. The Malay yields only to force, and must be watched when he seems most submissive and loyal. A Mohammedan of Mindanao will never sit in the Senate at Washington. If in the fulness of time absolute independence is granted the Christians of Luzon and the Filipinos as a people, it will be necessary to keep the American flag flying in Sulu and Mindanao."

Altogether, Secretary Dickinson's visit has not only served to aid to strengthen America's hand in the Philippines and to more firmly establish the cordial relations between America and Japan but his visit to Peking, where he was accorded exceptional honors, has served to greatly advance American interests in the Empire.

Commenting on the Peking visit the *Kobe Chronicle* says:

"At a reception given in his honor by the princes of the imperial family in the palace yesterday, the private parlor of the emperor was used for the proceedings. This is unprecedented in the history of China. The Chinese, learning of Mr. Dickinson's sympathetic attitude to China and his praise of Chinese institutions, are even more satisfied at this than are Mr. Dickinson and his party at the cordial reception afforded them. The influence of the pro-American section of the Chinese government is expected to increase as a result of Mr. Dickinson's visit."

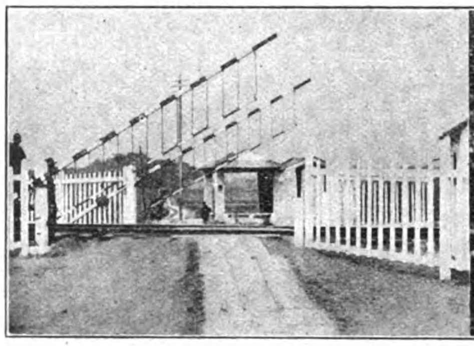
THE CANTON-HANKOW RAILWAY

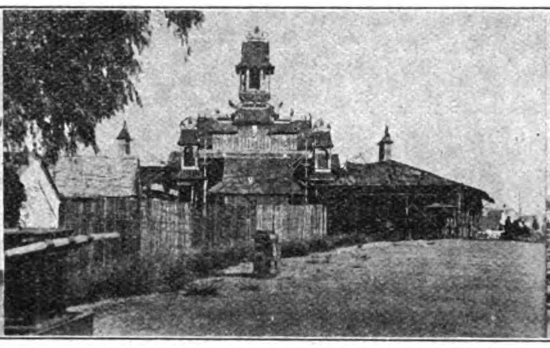
The latest advices from Peking offer little encouragement for an early conclusion of the foreign loan to cover the construction of this line through Honan and Hupeh as well as of the Szechuen line. Indeed, not a few authorities are of the opinion that the agreement pending will never be concluded. One of the reasons advanced is based on the strong sentiment in Honan and Hupeh against foreign money and foreign supervision. So widespread is this feeling that Peking realizes the wisdom of temporizing at this time.

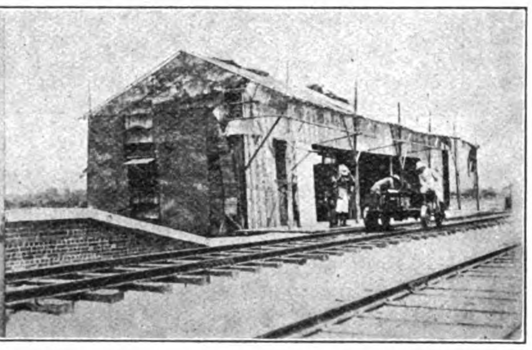
We have some evidence in the recent news items that contracts with foreign engineers would not be renewed by the Kwantung Yueh-Han Railway, that Hunan and Hupeh are not wanting in moral support from Kwangtung. That the three provinces are of one mind with regard to foreign loans is admitted by those familiar with the attitude of the directors of the Kwangtung Company.

Foreigners usually criticize the methods of Chinese in carrying on railway construction especially with respect to organization and direction. In reply the Chinese officials point to the fact that the Chinese people are footing the bill, and if there is delay the loss must affect the Chinese more seriously than the foreigners interested. They say that they realize the necessity of railways and in their own good time they will be built. This attitude is largely due to the lack of tact on the part of many westerners in dealing with Chinese officials.

The western engineer is anxious to enforce his standards and to expedite construction. He is interested in the success of the enterprise and he cannot sympathize with an administration that does not appreciate the various elements that enter into economical direction. He grows impatient of petty local disputes





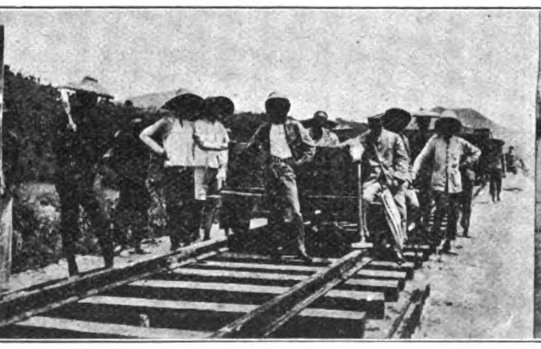


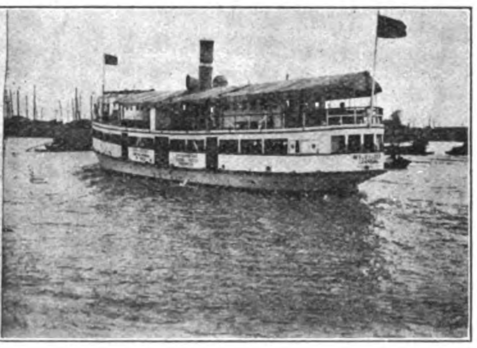
Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RAILWAY CROSSING GATE AT SAI CHUEN

WONGSHA TEMPORARY STATION

TEMPORARY STATION AT LIN PING





Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RAILWAY. CONSTRUCTING CONCRETE CENTER PIER OF TURNTABLE AT WONGSHA

END OF TRACK. SECTION B. RESIDENT ENGINEER SHERWIN ON CAR

FERRY BOAT YUH LEE OWNED BY THE RAILWAY COMPANY OF THE THREE PROVINCES

and native prejudice, and soon his manner is expressive of his mental attitude. The Chinese naturally resent what they term lack of consideration and co-operation is then impossible.

Chinese engineers educated abroad are of the opinion that much of the anti-foreign feeling is due to the lack of consideration shown the wishes of the Chinese and disregard of Chinese customs in conflict with western commercial ideas. The exercise of greater patience and tact with an acceptance of Chinese methods as a basis of understanding, they claim, would greatly assist the foreigner in carrying out just such projects as the Canton-Hankow Railway. If the foreigner would bear in mind that he is not building a railroad for foreigners but for the Chinese and that the latter, after all, are the people who have the greatest interest in the success or failure of such an enterprise, he would go no further than to proffer advice in such a manner as to invite confidence and the greatest possible measure of co-operation.

Chinese sentiment in Hunan may be said to be almost a unit in favor of the construction of the line with Chinese capital. The following communication published in the *Peking Daily News* reflects the spirit that prevails there:

"The question of foreign loans for industrial, commercial, and railway development in China is one of the most burning problems with the Chinese at the present day. It has troubled and is still troubling their minds, and every endeavour is being made to settle it by means that will produce the most satisfactory results both to China and the foreign syndicates concerned. A decade or so ago the people paid scarcely any attention to any question of this kind; now it is on the lips of every thinking Chinese and forms the great theme of discussion in the Chinese Press, which, though of comparatively recent birth, is wielding a mighty influence in moulding public opinion. This striking change in the national spirit of the people would not be regarded as surprising when it is remembered that conditions in the Empire were quite different then from what they are now. Broadly speaking, the Chinese focused their interests in the affairs of their family circles, outside which everything else was regarded with indifference. They held firmly to the principle of minding one's own business. With the rapid changes, not to say progress, she has undergone, however, the China of to-day is not the same China as that of ten or twenty years ago, and as affairs within her borders have reached such a stage that her people are at last compelled to adopt a different policy, they are determined to ascertain what is wrong with their country and to devise methods for its remedy. By establishment of numerous modern schools and colleges in the various provinces, western learning is fast spreading throughout the land, and the people, taught by the experience of past and present events, are beginning to see as they never saw and to think as they never thought before. They are constrained to use their eyes and ears and reasoning faculties in the hope of improving China and of freeing her with the help and advice of foreign friends who are deeply interested in her well-being. Foreign loans of the kind above mentioned are viewed by the Chinese in two different ways; either as one of the harmful agencies or, if properly contracted and the terms of the agreement be strictly adhered to, as a great blessing to the country. China, as pointed out and emphasized from time to time in the Chinese Press, has no objection whatever to legitimate foreign loans—in fact such loans

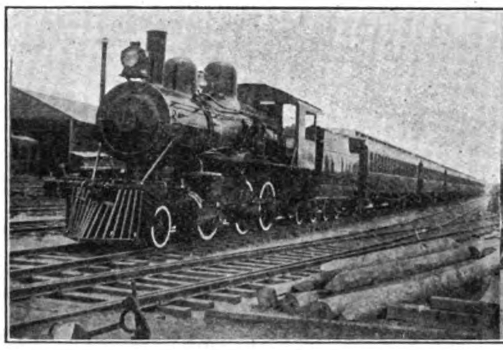
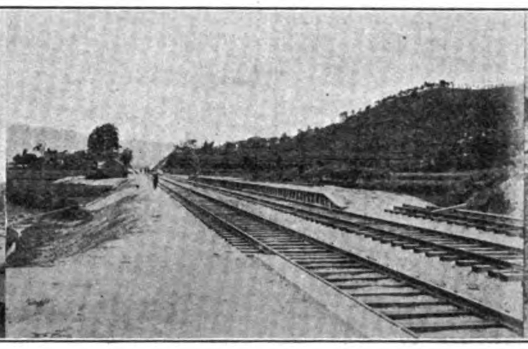
are welcome; it is only against foreign loans for securing political or semi-political rights or with ulterior motives that China objects to, and should object to with all her power, for, as has often been the case, it would surely involve her in serious trouble which would end in the loss of her rights and interests.

The Chinese have often tried to show what harm foreign loans of the latter description might do to China by citing the case of the late American Development Company, which has left a deep impression on their minds.

From the day the case was settled, the desire of the Chinese for foreign loans for railway development has been sadly affected, especially among the people of the several provinces directly concerned. Hunan is now recognized as one of the most progressive provinces of China, with many modern schools and colleges for acquiring the new learning, and showing a keen appreciation of things foreign. The Hunanese fully realize the value and importance of railways, the introduction of which in their province they would hail with unbounded delight. As seen in the reports, published in the Chinese papers, that portion of the Canton-Hankow railway which runs through Hunan has received the closest attention of the Hunanese because, as they are convinced, it has a vital bearing on them. They regard it as something affecting their life and death, and are determined to leave nothing undone until their object of building it with Chinese capital is attained. They have made strong representations to the Government that it must be built with Chinese capital at any cost. They firmly believe that right is on their side, and are endeavouring in every way possible to carry their point with the Government. They welcome its construction; they have not the least objection to the acceptance of foreign loans by the Government, but what they really object to and will not cease objecting to so long as the question remains unsettled is the building of the railway with foreign capital. It must be understood that in Hunan all classes, from the humblest farmer to the highest official, have invested money in the railway, and the investment was made directly in response to the appeal of the members of the Local Legislative Assembly of Hunan.

These members, who are nominated by the people, and are therefore their representatives, after having solemnly undertaken to perform the duty of persuading the people to subscribe capital for the construction of the railway, at once set to work with a view to procuring the desired results. They traveled everywhere, making stirring speeches in which they pointed out the duty of the people towards the railway, and its manifold advantages to them. There are matters in which the Hunanese might not agree, but in this, the building of the railway with Chinese capital, they unanimously agree. The speeches had an electric effect on the minds of those who listened to them with breathless interest, and some of them were so touched that they actually shed tears, and all willingly pledged themselves to purchase shares according to the best of their ability. Resolutions were passed to the effect that, come what may, the railway will be built with Chinese capital. Through the action of the members the Hunanese are now in a position to build the railway with Chinese capital, for sufficient funds have been raised to meet the necessary expenditure. It is carefully calculated that annually over $3,000,000 can be raised from actual cash shares, between $1,500,000 and $1,600,000 from shares to be paid with house rent collected at such large cities as Changhsa and Hsiangtan, over $100,000 from shares to be paid out of official salaries, and, as far as existing conditions are concerned, not less than $1,000,000 from shares allotted to merchants. All the subscribed shares have been definitely claimed, so that the money is always on hand ready to be used for the purpose for which it is intended. In connection with the redemption by China of that portion of the railway which was constructed by the American Syndicate, measures were adopted for the imposition of a salt tax and a rice tax, such taxes being capable of yielding large amounts, and from various sources, from which, including the Sanshui-Fatshan branch line, about $1,000,000 are obtainable every year. With all these funds at their disposal, the Hunanese have not been slow in appropriating them for the construction of the railway. As already decided, that section of the line, from Tsuchow to Hsiangtan, will be opened for public traffic on the 15th day of the 8th month, and that section from Changsha to Tsuchow in about the middle of the coming 11th month. Work connected with the construction of the upper section from Tsuchow to Pinchow and the lower section from Changsha to Yaochow will be started simultaneously.

If, in direct opposition to the express wish of the Hunanese and without any regard for the rights they claim, the Canton-Hankow railway should be built with foreign loans, and not with Chinese capital, the consequences that would inevitably follow would in the opinion of many be very serious indeed. As previously mentioned, they regard this railway as something affecting their life and death—something that they must maintain at any cost. From what can be gathered up to the present, it appears that if their cry, "Chinese capital only" should be unheeded, if their strong protest against the introduction of foreign loans for the construction of the railway should ultimately prove of no avail, they would more than likely take further steps to defend their rights and interests. Disturbances may break out all over Hunan, possibly resulting in the loss of innocent lives and the destruction of valuable property. Foreign lives and foreign property there would be endangered, and it would give rise to serious diplomatic negotiations, not to say the calling out of the foreign men of war for the protection of same. But this apparent calamity, which nobody would like to see happen, can easily be avoided if the Chinese should be allowed to build the railway themselves without the use of foreign loans, and in view of what may possibly happen in the alternative, it seems necessary that something should be done to settle the question with the Hunanese on a fair and satisfactory basis. As already stated, the bone of contention with the

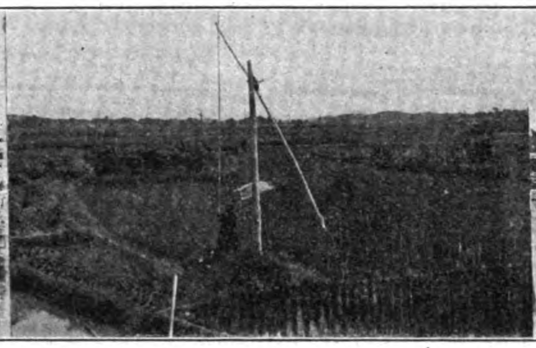
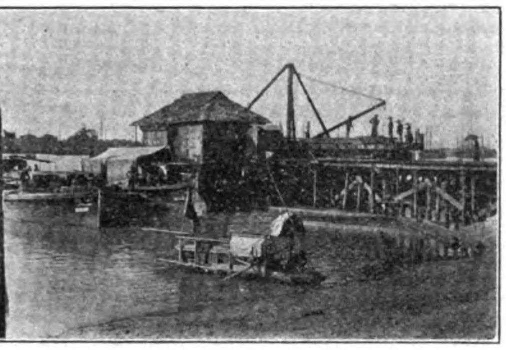



Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RY. TRAIN AT WONGSHA

LOOKING NORTH FROM YING CHIN STATION

CONSTRUCTION TRAIN NORTH OF QUAN TIEN

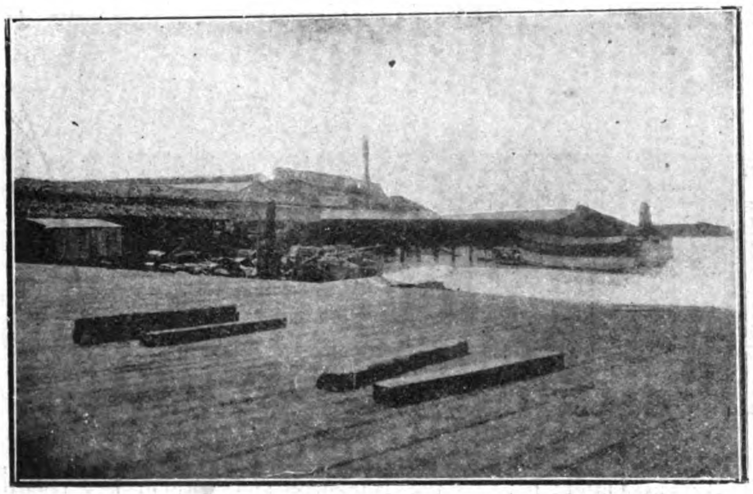
Courtesy J. S. Goodell, First Asst. Engineer.

RIVER BANK SOUTH FROM OLD WHARF, WONGSHA, CANTON

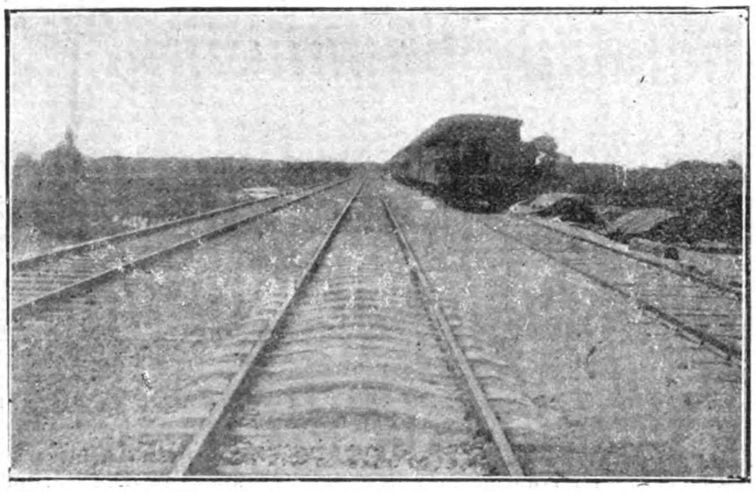
RICE IRRIGATION AT SAM WAH TIM

OLD WHARF AT WONGSHA

Hunanese is not the acceptance of foreign loans by the Government, but the use of foreign loans for the construction of the railway. Supposing, however, the Government should finally succeed by means of mere pressure exerted on the people in building the railway with foreign loans, even then, it may be assumed, the Hunanese would not stop taking further steps to defend their rights and interests. They would boycott the railway, and would cause such troubles and such difficulties as would paralyse all works of the railway."



CANTON-HANKOW TERMINUS AT SHEK-WAI-TONG

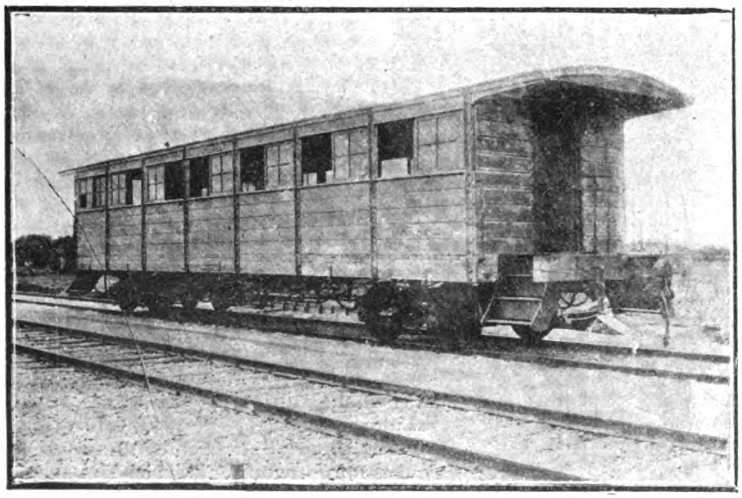


CONCRETE TIES USED WEST OF SHEK WAI-TONG

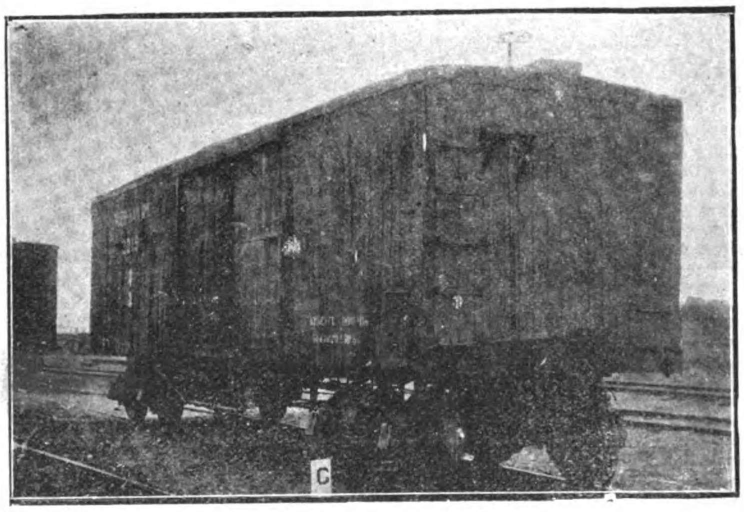
The above is not written by an alarmist out of his imagination. It is based on facts gathered from reliable sources, showing the firm conviction and attitude of the Hunan people towards the Canton-Hankow railway, and therefore deserves the serious consideration of foreign capitalists who are interested in the development of railways in China.

Commenting on the above, the *Peking News* expresses the prevailing sentiment among foreigners who are consistent in their friendship towards the Chinese and are desirous of giving them square deal when it says:

"We think foreign money should be welcome for the development of China's immense resources and railways especially. We object to foreign money only when it carries political designs which tend to the impairment of China's sovereignty; when it means that China has to pay double for what she needs and to receive half for what she sells. As regards the scheme set forth for the purpose of raising funds from officials' salaries and the increase of salt taxation, etc., we are afraid the writer is a little too sanguine. Experience tells."



CANTON-HANKOW OLD SECOND CLASS CAR NOW USED FOR THIRD CLASS TRAFFIC



TYPICAL BOX CAR

The Canton-Hankow Railway may be said to be divided into three parts. The section in Kwangtung province is controlled by the Kwangtung Yueh-Han Railway Co., Ltd., the Honan section by the Honan Yueh-Han Railway Co. and the Hupeh section by the Hupeh Yueh-Han Company. There is the Samshui branch in which each of the provinces have an squal interest and this line is controlled by what is known as the Canton-Hankow Railway of the Three Provinces.

To understand this, it is necessary to revert to 1905 when the American China Development Company turned over their rights to the Chinese. Among the assets was the completed Canton-Samshui branch 30 miles in length, then operating. This line was taken over by the three Provinces under which management it has been successfully operated with large revenue return annually. The control of the main line was then divided among the three provinces, the gentry of each province assuming the responsibility for the construction and operation of the line within its boundaries.

The total length of the main line as surveyed is about 750 miles of which 220 miles are in Kwangtung. When the American-China Development Company retired the work accomplished on the main line from Canton consisted of about twelve miles of embankment and about eight miles of steel. Work had been suspended in the fall of 1904. The latest reports from the Kwangtung section are to the effect that there are 60 miles operating on the main line north of Canton to a point called Kau Wan Shek and the track has been laid for a further distance of ten miles.

Grading is reported finished for a distance of 110 miles to Yingtak where the completion of the large bridge at that point is necessary before much is accomplished beyond.

This bridge has two 200-foot spans and four 60-foot spans. About mile 80 there is another bridge being constructed, but the completion of the line to Yingtak offers few serious difficulties. The work is up on the different intervening sections between the unfinished cuts and bridges and awaits the advance of the steel and construction trains to put on the finishing touches. However, unforseen delays, interruptions and disputes prevail so that the best results may not be anticipated.

Sir Liang Chentung while president of the company succeeded in accomplishing more real results than any of his predecessors. During the last year there have been a number of investigations by direction of Peking and these have been marked by suspension of work rumours of wholesale discharges and other agitation that seemed to affect the railway management throughout and postpone active work.

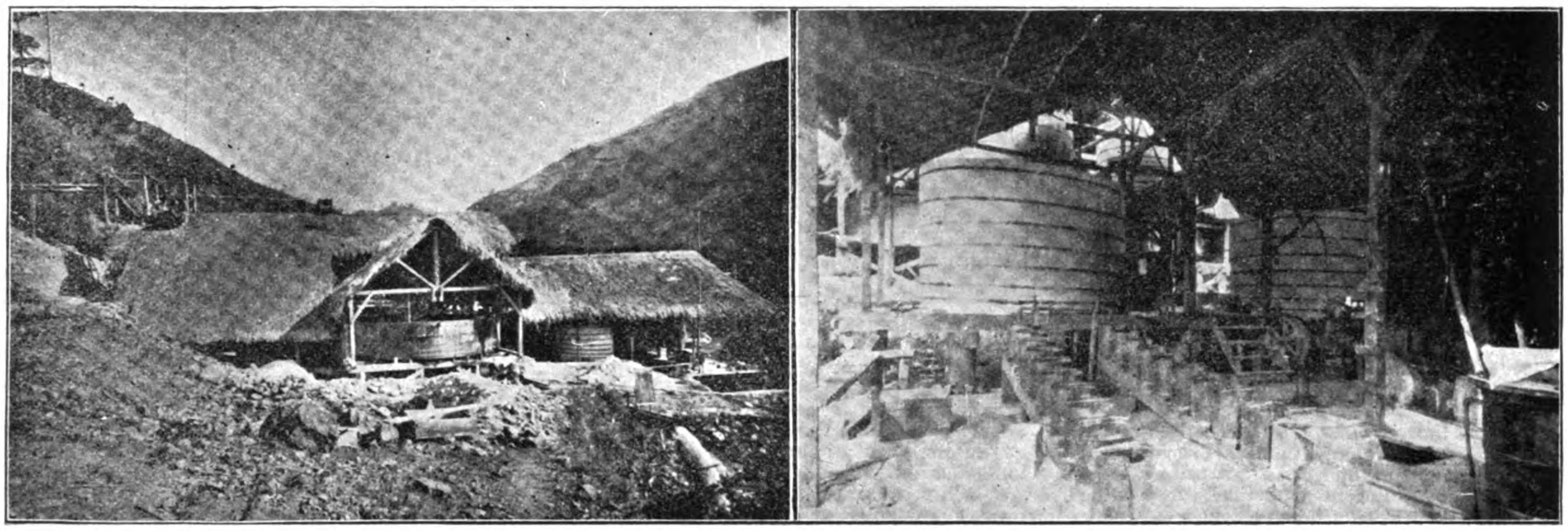
CYANIDING IN THE PHILIPPINES*

By C. M. Eye, E. M.

(Formerly Superintendent of the Benguet Consolidated Mining Company, now of the Colorado Mining Company.)

Thus far, the application of the cyanide process to the ores of the Philippines has been at two properties at Antamok, in the Benguet district, but from what is known regarding the character of the ores in other parts of the Islands and of the district mentioned, the use of this method of treatment probably will become much more general. It is with a view of assisting in this wide application that the plants on the properties mentioned are herein described and the general results and conclusions deduced from their operations given in considerable detail.

The first cyanide plant erected in the Islands at the mines of the Benguet Consolidated Mining Company at Antamok, Benguet district, was put into operation toward the close of 1906 to treat the tailings from the stamp mill, after amalgamation. The original installation consisted of four leaching tanks each 22 feet in diameter by 5 feet in depth, each with a central bottom discharge door 16 inches square; two solution storage tanks each 12 feet in diameter by 8 feet in depth; two gold solution tanks of the same dimensions as the solution storage tanks; two sump tanks each 14 feet in diameter by 6 feet in depth; one 1½-inch centrifugal pump; one set of forty individual bucket extractors or zinc boxes, arranged in four rows of ten in each row; one Hampton zinc lathe; one emery wheel; one small vacuum pump and one small vacuum filtering tank, the whole constituting a regulation leaching plant of the simplest type. The leachers were of 3-inch and the other tanks of 2-inch Oregon pine lumber with flat steel hoops throughout. The filters in the leachers consisted of a grating of pine strips 2 inches high, on which was placed, in two of the leachers, a layer of coco matting, over which was stretched a sewed burlap filter cloth. In the two other leachers, a layer of burlap was first nailed down and then a layer of raw coco fiber was laid, over which was stretched the regulation burlap filter cloth. For a time the raw coco fiber served as well as the coco matting, but it soon packed too hard, and later was removed entirely and the filter worked with but two layers of burlap, the top one consisting of the heaviest "Calcutta" bagging obtainable in this market.



CYANIDE PLANT OF THE BENGUET CONSOLIDATED MINING CO. AT ANTAMOK, BENGUET

Recently the leaching was improved by raising the filters to about 4 inches from the bottom, and fitting them throughout with coco matting which seems to be the very best filtering medium obtainable.

The individual zinc boxes proved insufficient and troublesome, and therefore they were soon replaced by regular redwood extractors of two double lines of compartments of nine compartments each, the dimensions of each compartment being 24 inches by 30 inches by 30 inches deep, with bottom plugs for removing the product at clean-up. An additional leaching tank of same dimensions as those in use was added in 1908. Two more solution storage tanks each 7 feet in diameter by 7 feet deep were added last year, and since then one of these has been converted into a mixing tank of lime, the solution being pumped through it on the way to the leachers.

Bulletin, Bureau, of Science, 1910.

Recently Mr. Joseph Lind, superintendent of the Canton-Samshui branch, retired after eight years service on the road. He served on this branch under the American China Development Co. and was retained in the position he occupied up to July of this year. Then followed the retirement of Mr. J. S. Goodell, First Assistant Engineer in charge of maintenance and way at Canton, who sailed for the United States in September at the conclusion of his contract.

In neither of the above instances were there any reasons assigned for the changes beyond the unconfirmed report that no contracts with foreign engineers would be renewed.

The chief engineer of the line is K. Y. Kwong, a graduate of Boston Tech. Mr. J. S. Goodell was his first assistant. Among the foreign engineers now on the line under contract are Charles Gasper, superintendent of motor power and cars; Rich Wood Randolf, Division Engineer in charge of the 3rd Division; James Thorpe in charge of section 9; Harry A. Rader, section 10; John D. Keeler, section 11; Japanese sections 12 and 13; D. G. Hislop, sections 14 and 15. Each of these sections represents approximately 10 miles and on all of them more or less work has been done.

It might be noted that under the proposed loan agreement, English and French engineers are to be employed on the Canton-Hankow and it is not improbable that this may have some bearing on the report of non-renewal of contracts with the present engineers. While the general opinion is growing that this loan will never be consummated owing to the serious opposition of the Hunanese, it is not improbable that the management, in anticipation of its conclusion, may have decided to prepare to meet the above stipulations. However, the seer who may provide an accurate forecast of the future of this enterprise, has not yet been located.

Little progress has been made in Hunan and Hupeh beyond surveys and organization so far as has been learned. Everything connected with the enterprise in these two provinces is overshadowed by the anti-foreign agitation.

Some light is thrown on operation by the report of Vice Consul Myers of Canton referring to results for 1909 as follows:

"Of the Yueh-Han Railway only 4 miles of track were opened to traffic in 1909, from Yum Tam to Par Kong How. There are many reasons for the little progress made during this time, the principal ones being the failure of grading contractors to carry out their contracts, lack of experienced workmen, lack of good foremen, and alleged lack of concerted action among the directors. The line is now open to traffic for 48 miles, while the grading for another 50 miles is practically completed.

"Last year 1,456,466 passengers were carried. The freight consists chiefly of pigs, poultry, etc., but this amounts to little. The amount collected in fares from passengers and freight was $120,460. The gross expenses for the year, not including fuel consumption, maintenance of equipment and maintenance of way, were $20,757. The rolling stock and machinery are valued at $51 ,000

"On the Sam-shui branch of this line 3,293,731 passengers were carried, of which 481 were foreigners. The gross earnings for 1909 were $263,043, an increase of $25,585 over the previous year. The total operating expenses amounted to $84,429, an increase of $2,782. In 1909, $56,995 were spent for the improvement of the line and additional property. Compared with the preceding year this item shows a marked decrease, the reason for which was the damage caused by floods during 1908."

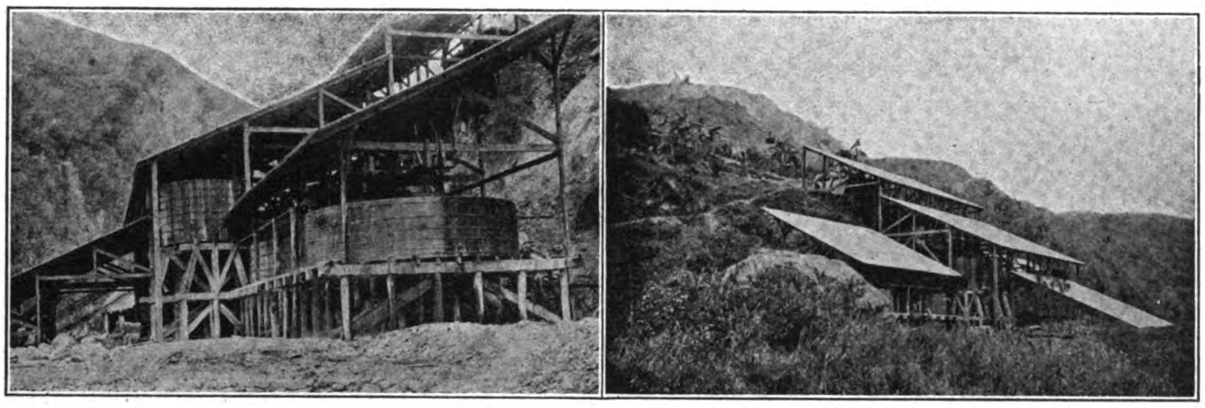
The extreme acidity of the ore has always required the addition of considerable alkali to protect the cyanide from decomposition. At the start, the common method was tried of adding quicklime with the ore as fed to the batteries, but this was soon abandoned, as it took a prohibitive amount of lime to accomplish the neutralization of all the acid, and also because a heavy deposit of calcium sulphate (artificial gypsum) formed on the screens, mortar lips, etc., and even incrusted the amalgam coating on the table. Then the method of spreading a layer of lime on the top of the leacher charge was tried, but an insufficient amount of lime was dissolved and carried downward to keep the charge neutral, even when it was given a preliminary water wash with the lime on top. Lime at that time was costing 20 cents gold per pound delivered, and, as caustic soda could be delivered for 5.5 cents gold per pound, the use of lime was for the time abandoned, and soda employed instead.

The practice then developed of draining off the water from a charge when filled, leveling off the top, putting about 50 pounds of caustic soda in a bucket in the center of the top and running water through it until the charge was covered, then opening the drain below and allowing this soda wash to drain off to waste. Then the drain was closed, a solution of full working strength (35 per cent KCN and 2 per cent soda) put on from the bottom until the charge was well covered, the charge then allowed to stand for a few hours, then percolation started downward, and continued under full head for from six to seven days, then the solution drawn down fairly close to bottom and weak solution put on, this following in successive heads for several days, then several successive heads of wash water were put on, and finally the charge sluiced out to waste.

The whole of the treatment took about eighteen days, which is an unusually long time, but it seemed to be necessary, as only a long contact with a strong solution would give a fair commercial extraction. This prolonged treatment was largely responsible for the rather high consumption of cyanide, which averaged a little over 2 pounds per ton treated. The use of soda was not entirely satisfactory, for the reason that unless very great care was taken to add it so that the degree of alkalinity of the solution coming off was nearly constant, there would be a formation of hydrates of iron and alumina, etc., which would clog the filter, get into the zinc boxes and make trouble generally. These were only soluble in a considerable excess of caustic soda in the solution. On the other hand, if the strength of soda was very much higher than the figure given, it led to an excessive consumption of zinc shavings. With the lowering of the price of lime to 1.25 cents gold per pound and the introduction of a mixing tank as noted elsewhere, the use of lime was resumed and of caustic soda abandoned, except to help out the lime in case a solution was acid or neutral. No more trouble was experienced with hydrates after lime was substituted for soda. No trouble of moment was ever encountered in securing good precipitations in the zinc boxes when they were properly dressed and filled, and the hydrates kept out, even though there was at all times an appreciable precipitation of copper on the zinc.

Soon after the beginning of operations it developed that the slimes, which were separated from the sands by an upward current classifier and run to waste, were of sufficient value to pay to treat, so a slimes plant, consisting of two tanks, each 14 feet in diameter by 16 feet in depth, was added. Each of these was provided with an overflow launder around the top, and with a stirring mechanism within, driven by bevel gear from a shaft above, common to both agitators. The stirring gears were designed by me and made in Manila, and consisted of a 3½-inch vertical shaft, to the upper end of which was keyed half a standard coupling, reversed, and to the lower end, the other half of a coupling in its normal position. The shaft was carried above by a train of balls in a groove in a cast plate, the under side of the coupling bearing on the balls. If it were desired to raise the whole mechanism, the supporting plate was raised by a chain block attached above to a basket frame fastened to the bearing plate. The rig could thus be raised or lowered while the agitator was running. The shaft was kept in line by two vertical guide bearings and when being raised or lowered slipped through the bevel gear by virtue of the latter being connected to it only by a feather in a long keyway. The agitator rig at the bottom consisted of four radial arms of 3-inch pipe bolted and clamped to a plate of three-fourths inch steel, 2 feet square, which was bolted up under the half coupling. On each radial arm 10 socket castings were clamped at equal spaces of 9 inches, and in each socket was fitted a stick 6 feet long and 1⅜ inches square, set vertically. The speed of the agitator was 16 revolutions per minute and the agitator was all that could be desired. These tanks had square discharge doors at the side at the bottom, and were provided with an entering launder that terminated in a square box reaching several feet below the surface near the center.

In practice, the stream of slimes from the classifier was run into the tank, being charged through this box, the solid matter settling to the bottom and the clear water overflowing the side to waste. As soon as the charge of settled slimes had reached a depth of about 7½ feet, the stream was switched to the other tank, and the supernatent water removed from the settled charge. Then about 500 pounds of slaked lime was added, agitation started, cyanide solution pumped in, the necessary amount of cyanide added to bring it up to working strength (testing 1 per cent KCN) and agitation continued for nine hours. This accomplished very thoroughly the dissolving of the gold values. After the agitator had been stopped and raised, the slimes were allowed to settle to their level in the tank, the clear gold bearing solution being removed by decantation through a hinged pipe in theside, and conducted to the weak gold tank in advance of the extractors. (The weak-solution circuit for the leaching was used for the treatment solution for the agitation.) One complete settling, decantation and settling consumed eighteen hours. Successive charges of weak solution were pumped on, agitated for fifteen minutes each time and removed by decantation, as many such charges being used as the time permitted before the tank was needed for the next charge. Usually 6 or 7 such decantations were made. This method of removal of the values was slow and incomplete, however, owing to the fact that at the maximum degree of settling the ratio of pulp to solution was still 40 to 60, or 1 part of solid matter to 1½ of liquid. In order to gain additional capacity as well as more complete washing, an automatic filter plant consisting of Ridgway one-unit filter, a double cylinder Imperial compressor, a horizontal wet displacement pump, and a steel-lined slimes pump was installed during the past summer. This plant was driven by a separate water wheel, and made a very complete installation in itself but, unfortunately, it was lost in the flood that destroyed the greater part of the cyanide equipment in November of the present year, and before very many data as to its efficiency were obtained. However, it would undoubtedly have effected a very material saving, as well as have increased the capacity of the slimes plant several times over.



CYANIDE PLANT AND MILL OF THE BUA GOLD MINING CO., BENGUET

At the beginning of operations, the crushing was rather coarse, a diagonal slot screen with width of opening corresponding to 10 mesh per linear inch being used. However, leaching results showed that this was too coarse for good work, and the mesh was gradually increased, first by using 16, then 20, then 24, and finally 30 mesh sizes, with increasingly good results. Investigation of the sands before and after leaching also showed that a small amount of high-grade iron sulphide carried a fair percentage of the values, and that this sulphide still contained good values after leaching, so a Wilfley table was installed over which the sands passed from the classifier, and from one-thirtieth to one-fiftieth of the tonnage was removed as a high-grade concentrate which was stored for future treatment or shipping. A series of experiments on this material showed that by fine grinding in cyanide solution in a tube mill, well over 90 per cent of the value was dissolved. In fact, all of the work done at this plant showed that when the ore is reduced to slime, the solution of the gold content can be accomplished easily, which points to this method of treatment as best for the whole tailings from the stamp mill, provided that every part of the latter will stand the cost of the reduction to slimes, which would not be large, in view of the splendid and cheap water power available. It is to be hoped that when the plant is renewed, it will be along these lines.

The plant of the Bua Mining Company, similar in many respects to the original leaching plant of the Benguet Consolidated Company, was installed and put into operation in 1907 to treat

(Continued on page 170.)

THE FAR EASTERN REVIEW

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CONTENTS

	Page
Formal Opening of the British Section Kowloon-Canton Railway	151
Opening of the Iloilo-Capiz Line of the Philippine Railway Co.	158
Visit of the American Secretary of War Canton-Hankow Railway	165
Cyaniding in the Philippines	165
Hongkong and Her Railway	167
Railway Development in the Visayas	168
China's Senate	168
Recall of Yuan Shih-kai	169
Death of William C. Cowie	170
Reviews	170
Philippine Railway for 1910	171
Contracting News	175
Far Eastern Railway News	176
Philippine Mining News	179
Far Eastern Engineering, Construction, Commercial & Financial News	180
London Metal Market	183
Far Eastern Share Quotations	184

HONGKONG AND HER RAILWAY

Hongkong inaugurated a new era in her history on October 1st, when Sir Henry May declared the British section of the line to Canton open to traffic. This era might be known as one of fulfilment of the hopes of the promoters of the enterprise and the completion of this first link connecting the British colony to the Chinese empire has been marked by a general expression throughout the colony of loyalty to the enterprise and of a desire to assist in making the venture a success.

The comment in the local press involves general acceptance of the statement made by Mr. E. S. Lindsay, M.I.C.E., Chief Resident Engineer, quoted elsewhere, and where formerly there was a disposition to criticize, we find general appreciation, due largely to a more comprehensive knowledge of the serious character of the undertaking and the almost impossible engineering difficulties overcome.

The *China Mail* does not expect immediate results but leaves the outcome of this railway connection hopefully to the future. That paper says:

"With the opening on Oct. 1st of the British section of the Kowloon-Canton Railway, Hongkong enters upon a new chapter of its existence. What will be written in that chapter Father Time will alone disclose. The high hopes which were entertained when this particular railway project first took shape and form in men's minds are not destined, we fear, to be realized, at least for a long time to come. For it must be evident to the merest tyro that the little bit of railway track running through the hinterland of British Kowloon can be but a small factor in securing that development of trade and commerce which the Colony so ardently longs to see. But it is a means to an end, and as such justifies its existence. Someday when the great trunk line of central China has been constructed and put into regular working order, Kowloon will be the southern end of a line of steel rails which, running through some of the richest districts of China, will, via Hankow and Peking, connect with the Manchurian railway system and thereby with the Siberian line running to Moscow. And as the Far Eastern terminus of such a system Kowloon should, in the years to come, swell into a place of much importance. But many a long day will have to drag its weary length to eventide ere we see this magnificent dream realized. For the moment we can but hope that the through connection with Canton will be realized by next July and so enable a commencement to be made in the exploitation of the densely populated delta which has the City of Rams as its provincial centre.

"The immediate prospects ahead of our little bit of line are not particularly bright. Its cost, so very much above the first entertained idea, will make the earning of interest on the outlay alone a very heavy task, and for many years we fear that the line will be a white elephant, the expense of whose up-keep will fall heavily on the Colonial Treasury. The political importance of the line outweighs every other consideration. We had to build it in the future interests of Hongkong—and we hope posterity will be duly thankful to us for the sacrifices we have made."

The *Hongkong Daily Press* believes, with Sir Henry May, that the immediate effect of British section will be the more rapid development of the New Territory which has suffered through lack of communication, but looks forward to the greater benefits of international connections in the future. We quote:

"Saturday October 1st, 1910, will be a memorable day in the history of the colony of Hongkong. After many years of waiting the community had the satisfaction of witnessing the opening of a railway line through the British territory of Kowloon, and can now look forward with eager anticipation to the completion of the Chinese section—more than four times the length of the British section—which will give us direct connection with the city of Canton, the great metropolis of South China. If all goes well, the entire length of 112 miles will be open to through traffic long before this time next year. We shall then be watching more closely than now the progress being made with the construction of the great arterial line which is to connect Canton with Hankow, and contemplating the prospect of some day being able to travel from Hongkong, via Hankow and Peking thence across Siberia to Calais. That, it is true, is looking a long way ahead. Meanwhile it remains for the community at whose cost the short British section of the line has been made to do all in its power to promote in every way its usefulness and its prosperity. The undertaking has been a costly one for a small Colony, but we are glad to have it on the authority of an expert of the wide experience of the present General Manager of the line that, having regard to the nature of the work, its cost compares favourably with similar undertakings elsewhere. What, however, is necessary at the present time is to emphasise the original intention of the railway, for as Mr. Lindsey very appositely remarked in the course of his speech "the original intention is liable to be lost sight of when, after a railway is finished, traffic sufficient to pay for its working and the interest on its cost is not immediately forthcoming." Probably it will be some years before the revenue covers even running expenses, to say nothing of interest. Consequently in the history of the undertaking which appears on another page we have deemed it important to give special prominence to the main considerations which weighed with those who so strongly advocated the construction of this line a few years ago. No doubt its most immediate effect will be to encourage development in the New Territory, a subject on which Sir Henry May enlarged in his address on Saturday. But there are even more substantial reasons for the railway. So long as Hongkong remained without railway connection with Canton, while great railway undertakings were projected to connect Canton with the interior of China, the Colony was threatened with the creation of a rival port in the vicinity of the Bogue which would serve as a seaport terminus of the great trunk railway. As the China Association pointed out to the Government, "the bare possibility of such a contingency is sufficient to arouse the liveliest anxiety in the minds of all persons interested in the welfare and prosperity of the Colony, not alone on account of the individual losses which would ensue from the enormous depreciation of property and investments, but also because of the severe blow it would inflict on British influence and prestige throughout the whole of China." These are weighty considerations, and now that the British section of the line has been constructed and we see an early prospect of through traffic being opened with Canton, we can renew our thanks and congratulations.

"Trade has in other lands invariably sprung up around the railways and we do not see why the same phenomenon should not occur in southern China. True the Canton river is a formidable competitor and always will be, but with the laying down of feeder branch lines to important centres of population and industry, the railway should tap new sources of potential wealth which the riverine trade cannot possibly touch or affect. Besides, if the experience of Japan is duplicated in her consanguinous neighbour, the Chinese will not be long in acquiring the railway habit. When a man can cover a distance in a few hours with ease and comfort which used to take him days of toil and worry to accomplish, it is not long before he finds it necessary to repeat the journey. When railways were first built in Japan people said that it would be hopeless to expect much passenger traffic as the habits of the Japanese, apart from certain pilgrimages made at different ages and times, made him a home-keeping human. How completely these old prophecies have been exploded any one who has travelled in Japan can tell you. We venture to think it will be the same in China."

Manila does not propose, apparently, to remain idly by and permit Hongkong to capture all South China trade, perhaps for the reason that Americans have not forgotten the loss of prestige and trade resulting from the American-China Development Co. fizzle and would redeem their position. The *Daily Bulletin* is not so sanguine of results but believes Manila's future opportunities should be looked into. That paper says:

"It might be said that had the American-China Development Company carried out their contract with China on the Canton-Hankow

the Kowloon-Canton would very probably not have been built. The fizzle of the A. C. D. made it possible for Hongkong to secure terminal connections and where a modern harbor for Canton was proposed by the Americans to handle the Canton-Hankow freight, the British port of Hongkong will now take care of it and have the advantage of being a distributing center with rail connections throughout the richest sections of the empire.

"Her only probable competitor for this South China trade would be Manila, if the latter wakes up. It will require years of preparation on the part of the Philippine metropolis to secure any portion of this trade but there is plenty of time. It would mean a South China harbor and a well equipped steamship line engaged in reciprocal trade with the Chinese.

"Freight rates from Manila must meet the rates over the 110 miles of railway between Hongkong and Canton and we must be in a position to secure return cargoes. However, this matter is worth looking into. Manila must not sit idly by and be satisfied with the crumbs from South China. We would suggest that the Merchants' Association and the Cantonese merchants of Manila get together and see what can be done. Competition between Hongkong and Manila for this trade would prove interesting and instructive and at the same time test out the capacity of the two nations of shopkeepers at their respective jumping off places."

DEVELOPMENT WORK OF THE PHILIPPINE RAILWAY COMPANY IN THE VISAYAN ISLANDS

The driving of the last spike of the Panay Line of the Philippine Railway Company brings us to the consideration of what the completion of these lines of railroad means to the country, in general, through which they pass.

The connecting up of the rails on the Island of Panay marks the beginning of the end of the largest piece of construction work financed by American Capital in the Far East. Despite the greatest difficulties on account of labor shortage, weather conditions in the Islands, and the strained financial conditions in the United States, this work has been pushed steadily for the past three years. It will take possibly another year to replace the temporary wooden structures with concrete and steel bridges, complete the station buildings, widen the embankments to full width, put the required amount of ballast under the track, and in general put the last thirty miles in a state of final completion.

The lines on Cebu and Panay run through some of the richest country in the Philippines, but owing to cattle diseases, the insurrection, the lack of modern methods of cultivation, and the almost total absence of any means of transportation, mile after mile of the richest land has lain idle for years.

With characteristic American energy, the management of the lines have set themselves to the task of developing the resources of the country tributary to the railway.

Realizing that the methods in common use among the Western railroads of the United States will not suffice in this country, they are endeavoring to accomplish the same results by other means.

The territory through which the road runs on the Island of Cebu is the most thickly populated section of the Archipelago. In spite of this, there is much land that is not under cultivation and the land that has been planted, in many cases, is not producing more than fifty per cent of its possible output. Corn, hemp and maguey, sugar and tobacco are the principal products.

The Railway Company has imported from the United States several different varieties of seed corn which will be distributed, at actual cost, to the farmers. Railway representatives will closely supervise the planting and cultivation of the corn. When it is mature, the seeds which produce the most corn per hectare will be decided upon and arrangements made to furnish this seed to all planters.

There are many large tracts of land, which are capable of growing maguey, not now under cultivation and much of the maguey now raised is improperly planted and the leaves cut before they are fully matured. The mailing of circulars and talking with the people has little, if any, effect. In order to give them a practical demonstration and object lesson as to the proper method of cultivating maguey, the Railway Company borrowed from the Bureau of Agriculture a Prieto maguey stripping machine and set it up on two flat cars. This machine was taken to various stations and set out on a side track. All the farmers were invited to bring in their maguey and have it stripped free of charge. When a farmer brought in his maguey, there was a representative of the Railway on hand to show him what, if anything, was wrong with his maguey. They stripped some of the maguey that had been properly planted and was fully matured, showing him the difference in the fibre, and then instructed him fully as to how he should handle his fibre in the future. In order to make this object lesson doubly strong, the Railway Company arranged through the Cebu exporting firms to let them act as buyers for their account. When a farmer brought in his maguey and had it stripped, the representative of the Railway immediately offered him the market price for the grade of maguey which he had and told him that if he had produced maguey equal to samples shown him, he would have been paid considerably more for it. This was an argument that the farmer could not refute, and within a short time the quality of fibre produced was so improved that the price for first class maguey was increased from ₱6.50 to ₱9.00 per picul and to-day Cebu maguey ranks higher than any other maguey raised in the Islands.

Acting as distributing agents for the Bureau of Agriculture, the Railway Company have furnished the planters of Cebu 4,000,000 maguey plants, free of charge, which have been set out under the supervision of the Railway Company. A record is kept of the parties to whom the plants are furnished and where they are planted and they are inspected at frequent intervals by the representatives of the Railway Company and the Bureau of Agriculture. In about four years Cebu will rank first in the cultivation of maguey and derive an immense revenue from this source.

At the present time the produce of the country in both Cebu and Panay is bought up by Chino and Filipino traders and, after passing through the hands of two or three middlemen, finally reaches the exporter The producers have not the slightest idea as to the prevailing prices at the market points and are at the mercy of the local buyers. To obviate this difficulty the Company gets out every two weeks sheets showing the prices paid for all commodities produced in the territory tributary to the line, at the various market points along the line. These price lists are posted at each station. In this way the farmer can ascertain at a glance the prices paid for his product at all points along the line and ship it wherever he can get the most for it. This is likewise a guide for buyers.

In order to encourage the people to sell direct to the exporters or consumers, arrangements have been made with steamship lines running out of Iloilo and Cebu to Manila, whereby through bills of lading are issued at stations along the railway direct to Manila. Freight so billed is switched down onto the water front and loaded onto the steamer direct, thus eliminating any charge for transfer. If there is any transfer charge such as lightering across the river at Iloilo, it is absorbed by the railway and steamship company, so that the rate to the shipper is simply the railway plus the steamship rate from his station to Manila, and vice versa.

In order to encourage the large firms to send buyers out to deal directly with the people, the Company allow them to build bodegas, according to design approved by the Company, on their right of way convenient to the loading tracks, at a nominal rental for the land, and in some cases have even gone so far as to permit bona fide buyers to use their freight houses to store freight until time to send it to the steamer for Manila.

Each station is provided with a sample rack on which are exhibited choice samples of the products of the surrounding country, together with instructions in Visayan for proper planting and cultivation in order to raise similar grades.

The natives have already begun to appreciate the work of the Railway Company in this direction and are holding their products for better prices and the local buyers are forced to pay the farmer what product is worth.

There are many cases of farmers three or four miles from the railway being absolutely cut off on account of lack of passable roads. The Company is making strenuous efforts to get the municipal, provincial and insular governments to put the existing roads in condition or construct new roads from such districts to the Railway stations.

They have representatives scouring the country talking with hacenderos and planters, finding out what they need, the conditions under which they are working, rendering them assistance where possible, and encouraging them in every way to put all the land under their control under cultivation. Land that is for sale is noted and prospective purchasers encouraged to apply to the Industrial Department of the Railway for assistance in buying land. Every effort is being made to get outside capital interested in the Visayas.

New industries are being encouraged in every possible way, the railway seeking out new industries which are suitable for the country, finding a market for their output, and advising them as to the purchase of raw material.

A canvas is being made on Panay to see how many farmers in each district would contract for the use of cable plows on their land. If a sufficient number will go into it, the Company will endeavor to get such plows put in each district. The agents of the Company act as selling agents for agricultural implements and up to date plows are put on exhibition at each station, together with any other agricultural implements that firms may desire to exhibit while working the adjoining territory.

Through the efforts of the Railway Company, one of the missionary societies in the Island of Panay has taken steps to secure 200 hectares of land on mile 42 of the Railway and will start immediately an industrial school. They have about 100 boys in their charge and will make a model farm and at the same time teach the younger generation modern methods of cultivation.

An effort is being made to get the Bureau of Education to start a similar school on some land which they own near Passi. Such a school would, if properly managed, be practically self-supporting. As nine tenths of the wealth of the Islands must always come from the products of the soil, it would seem that a large percentage of the funds and attention of the Bureau of Education should be devoted to educating the people along agricultural lines. Such schools would be practically self supporting and would not only teach the boys in the school the proper methods, but would turn them for life toward agricultural pursuits, and at the same time serve as an object lesson to all the older farmers who could visit the schools. It speaks highly for the Baptist Missionary Society in the Visayas that they have been the first to take up this work.

It will be a long, hard undertaking, and probably cannot be accomplished without the active assistance of the Bureau of Agriculture, but the Railway Company hopes to make the Filipinos see the advantage of putting every available hectare of land under cultivation, using modern methods of farming and preparing their crops for the market. If they are successful, within ten years the Visayan Islands of Panay and Cebu will be two of the richest Islands in the Archipelago.

CHINA'S SENATE

Constitutional government for China was advanced this month by the convening of the National Senate of two hundred members, half of whom were appointed by the Prince Regent and the balance selected from among two hundred candidates named by the provincial assemblies.

On October 3, the following decree was published:

"We have recently decreed that the 20th day of the 8th moon this year has been selected as the day of the first meeting of the Senate and the members should prepare all things necessary previous to the opening of the Senate

according to the regulation enforced. With reference to the memorial presented to us regarding the completion of the establishment of the Senate, we are exceedingly pleased to note this mode of procedure. In accordance with the instructions given by the late Grand Empress-Dowager the late Emperor had, in consideration of the difficult circumstances of the Empire, issued many Rescripts advising that preparation should be made for a constitutional government which event has never been adopted before and this mode should be continually followed for a hundred generations. In obedience to the late Emperor's instructions, we have repeatedly issued Decrees to the metropolitan high officials to prepare for the constitutional reform in regular order. As the Senate is the foundation of the upper and lower houses of parliament for which constitutional government will be relied on the performance of the administration of that department, and moreover the regulations for many years performances have been drawn up and the people, both Chinese and Foreigners, are now eagerly expecting to see this reform carried out, We therefore ordered the Grand Councillors and the Members of the Government Council to prepare all questions regarding various state affairs to be put forward before the first meeting of the Senate for decision in accordance with the rules and conditions enforced. Decree is hereby issued ordering the Members of the Senate to act in equity in the performance of their duties, thus showing to the people our sincere desire to fulfill the anticipations of our people."

Upon the opening of the conference the following special decree was issued:

"Ever since I was instructed by Imperial Order to be the Regent of the Empire the Country has been in a state of embarrassment and I have striven my utmost, both day and night in co-operation with the Princes and the High Ministers, to prepare everything for constitutional government in regular order. As the establishment of the Senate has been completed and the ceremony for the formal opening has taken place, I was glad in attending this special happy event and it was also held as the first conference. The principal important consequence of the administration of constitutional government in a civilized country is to depend on the people and the Government officials who should harmoniously unite together in the discharge of their duties. As the establishment of the Senate is the first great event of China and the members were selected by the people, it is hoped that all the Members will exert their best endeavors to show their merit in their performances."

The senators selected by the Prince Regent were chosen from among the members of the Imperial family, high officials, literati and gentry who are staunch supporters of the dynasty and represent the most conservative interests of the Empire. Prince Pu Lun presided at the initial sessions which were marked by decorum and dignity. The following questions were submitted for consideration and from indications the first Senate will find its time well employed:

1.—The Regulations for Insurance and Transportation of Cargoes.

2.—The Press Law.

3.—The reorganization of Education in the Empire.

4.—To promote commerce in Mongolia.

5.—The privilege of copyright.

The following are the six questions submitted to the Senate's consideration by the various provincial assemblies.

1.—Kwangse Province—The prohibition of the opening of opium shops.

2.—Kiangsi Province—The operation of the Stamp Tax.

3.—Kiangsu—To relieve the embarrassed situation of the sub-prefectures and districts.

4.—Kiangsu—The reorganization of levying of taxes and making deeds for property.

5.—Hunan—The suppression of oipum.

6.—Hupeh—The administration of navigation.

So far as has been learned, the organization was effected with little friction. The members have had the benefit of the experience of the provincial assemblies and this may be responsible for the harmony reported.

It might also be said that the body is representative of the different elements of Chinese life and while the lines are sharply drawn between the Imperial appointees and the elected provincial members, the large questions before them for consideration have absorbed their attention, and until these are disposed of and effective legislation recommended the capacity of the Senate to lead the way to constitutional government shall remain indefinite.

However, the Senators' conduct has already attracted favorable comment from the foreign press. The *Shanghai Times* leads in a very optimistic vein. After referring to the success of the Provincial Assemblies, the organization of which was the first step towards self-government, that paper says:

"It was not to be expected that such an acute question as the dispute between the Governor and Provincial Assembly of Kwangsi should come up for discussion at one of the first meetings of the new body, but the way in which it was handled is another indication of the genius for self-government which is being shown by the Chinese people. As in every such gathering in other countries, there were members who seemed inclined to break away from the established rules governing their organization, but these were restrained by the majority, which insisted on proceeding according to the constitution of the Senate. A suitable Memorial was sent to the Throne through the proper official body, conveying the opinion of the Senate as to the dispute, and there is every likelihood that an early settlement will be effected. The incident was a severe strain upon a newly organized body in which there had been no time for leaders to be developed, and the way in which it was disposed of is the best possible assurance to the country that the Senate will be a most useful addition to the governmental organization of China on modern lines. It also shows that the plan for a gradual extension of power to the representatives of the people during a term of nine years was carefully devised, and that there should be no deviation from it in the interests of a certain section of the more restless gentry. The experiences of the Provincial Assemblies of last year have been a valuable guide to the Senate at its first meeting, and as it will prove through each successive development of the programme—that what has gone before will be a valuable lesson to the part which follows."

The *North China Daily News* describes the duties of the Senate and refers to it, with its restricted powers, as a buffer between the throne and the representative provincial bodies That paper says:

"Among the duties of the Senate will be the discussion of all the financial matters of the Empire, new laws (except the Constitution and such as appertain to the Imperial household) and changes in old laws, together with other matters that may be specially submitted to it. In the event of a Grand Councillor or any Minister disagreeing with a resolution of the Senate, the latter will be required to reconsider its opinion, and if the matter is not susceptible of adjustment, it has to be referred to the Throne for a final decision. Direct petitions from the people will be submitted to this provisional Parliament, as well as all disputes between provincial assemblies or between an assembly and the government of its province; while the Parliament has the right of putting questions to a provincial assembly regarding provincial affairs. Finally the Senate, with the concurrence of more than two-thirds of its members, may refer to the Emperor any arbitrary act of a high official committed in violation of law or in disregard of the rights of the Chamber.

"In China, as she is at present constituted, it is not likely that the facts of government will be found outside the theory of government. There is no intention on the part of the Throne to allow, except under extreme pressure, the constitutional movement to transfer the Emperor's prerogatives to a Cabinet dependent on the majority in a popular Assembly, representative of the whole Empire. The movement, indeed, has been utilized to advance the much needed centralization of political power in Peking. So far the provincial governments have acquiesced under the glamour of constitutional progress in the surrender of their diplomatic authority and have tolerated, without encouraging, tentative interference with their financial powers. Whether they will consent without a struggle to a complete surrender of the latter may be thought problematical; but in the Senate the Throne would seem to have found a convenient arena for arriving at a solution of the difficulty in a way that will shield it from direct attack when the provinces are pressed into their last line of defence.

"In the Chinese system of constitutional government, it is to be feared, there is little indication at present that the Throne wishes to allow out of its own hands either the legislature, the judiciary or the executive. On the other hand the provincial assemblies have shown a tendency to take themselves seriously and to compel attention on the part of the local governments. If the Senate can invest itself with the same degree of independence, the world will be able to watch with no little interest the struggle of these deliberative bodies to impose true parliamentary ideals upon a people traditionally conservative and habituated to obedience. No political forces in Japan have been evolved within fifty years with sufficient strength to remodel the government; and in China the only additional agent that might be pressed into the service of out-and-out constitutionalists would be the possibility of a dynastic change, which is happily lacking in Japan. But if China is strange to the idea of constitutionalism, she is equally ignorant of the principle that subordinates the interests of the individual to the welfare of the nation, and on no other basis can she hope to build a successful constitutional government."

The *China Daily Press* interprets the convening of the Senate as evidence of the sincerity of purpose of the Prince Regent to carry out the program towards ultimate constitutional government and referring to the conservatism that marks the progress in this direction says:

"There are many ambitious, dissatisfied people in the Empire who are clamouring for the earlier establishment of Parliament, but until those who are likely to be entrusted with the new duties have passed through the period of probation, and the electorate have been educated to the proper appreciation of the franchise, there seems little reason to hasten the experiment which is fraught with so much importance. The Government has given proof that it will implement the promise made some four years ago. There is no occasion yet to question its honesty of purpose, and the speech of the Prince Regent on Monday in opening the National Assembly conveys the impression that the Throne views with sympathy the steps taken towards the development of constitutional government Certainly, it will be the wish of all interested in China's progress that the hopes entertained regarding the new body will be fulfilled, and that it will give satisfaction to the Government which has called it into existence."

In the progress towards her ideal of constitutional government, China may feel assured of constructive encouragement by all broad-minded foreigners. No step taken has been a disappointment and confidence in the capacity of the Chinese to ultimately master the principles of self government is not wanting.

THE RECALL OF YUAN SHIH-KAI

China's need of her strongest men is becoming more and more apparent as new and complicated problems of government and finance develop with the progress of the new national reform movement. The finances of the country are suffering from the lack of support accorded the Prince Regent by the provincial authorities and, instead of having the benefit of the advice of experienced councillors, the solution of the financial problem daily becomes a more serious task for the lack of it.

It is only natural that the absence of H. E. Yuan Shih-Kai should be noted at this juncture and a well defined sentiment develop favoring his recall.

We find the *London Times* strong in its endorsement of the retired Ex-Grand Councillor as "the one man who in late years has shown energy and strength of will" and urges his prompt recall.

The Empress Dowager is reported to have told the Prince Regent that if he carried out his intention to reinstate Yuan Shih-Kai she would

promptly assume the reins of government. Many conflicting reports emanate from Peking respecting this subject but it is generally conceded that the matter of his recall was among the subjects presented by the Prince Regent for the consideration of the Senate.

A telegram from Peking to the *North China Daily News* under date of September 6 stated that reports in the Chinese Press have been varied on the re-employment of the ex-Grand Councillor Yuan Shi-kai, and it is stated that, as the Peking Government intends to reinstate Yuan, a certain foreign Power is opposed to the idea and will make efforts to frustrate the proposal. While it is stated that the Government has decided to restore him to power in the Grand Council, another report has it that Yuan has refused to accept office in spite of requests from several high officials. It is also said that President Yin Chang strongly recommended Yuan Shih-kai for his pre-eminent capability, and when the Government sought the views of the Viceroys and Governors in the Empire on the question, the majority were in favor of Yuan's reinstatement."

Again on September 8th the announcement was made that the negotiations with Yuan Shih-kai regarding his reinstallation to office are going on, and it appears to be a mere question of time that he will again enter the Imperial service. Apart from an office within the Central Government of Peking there might be taken into consideration for Yuan Shih-kai the post of a Viceroy. The tendency of the Prince Regent to assemble around himself as much as possible of strong men is evident, and may be considered as a token of his strong will to introduce earnest actual reforms.

The Grand Councillors seem willing to placate the growing sentiment in the Ex-Grand Councillor's favor and have recommended that he be appointed viceroy of some province.

His old friend, H. E. Tong Shao-yi, recently appointed President of the Ministry of Communications, is reported to have visited Yuan Shih-kai at Changtefu on October 3, but the outcome of the visit has not been made public. It will be remembered H. E. Tang Shao-yi was the right hand man of Yuan Shih-kai for many years and it was during his absence on a world tour, studying foreign financial systems, that the Imperial deaths occured followed by the retirement of Yuan Shih-kai. Upon his return he was not warmly received and up to his recent appointment lived in retirement. The friends of Yuan Shih-kai saw in his recent appointment a change of heart on the part of the Prince Regent and they looked forward hopefully to his early reinstatement.

So far as can be learned Yuan Shih-kai does not propose to respond unless his course throughout is fully justified by complete restoration to his former position and honors. He has been most reserved since his retirement and this alone has strengthened his position.

A Chinese report published in the *North China Daily News* is to the effect that Yuan Shih-kai asked General Wang Shih-chen to meet him at Changteh, to discuss important affairs and that the latter complied with the request. Later Yuan Shih-kai telegraphed to the Grand Council expressing his unwillingness to rejoin the public service. He also made certain suggestions, which were presented to the Prince Regent for perusal.

The *North China Daily News* while strongly endorsing Yuan Shih-kai believes it would be wiser for him to remain in retirement until after loans now proposed have been concluded unless he could count on "absolute freedom from court and official intrigue." That journal says:

"As far as the outside world has been able to judge, Yuan Shih-kai has added to his reputation by his correct attitude during his retirement. If he returns to power, it seems probable that it will be at the solicitation of the Peking Government and not as a result of intrigue on his part. He will, therefore, be well advised to accept nothing but the highest post and to display no anxiety to obtain even that. So convinced are we that China is in a bad way, that one strong personality with progressive ideas and breadth of vision at the head of things is required for her rehabilitation and that no one has shown himself more capable for the post during these twenty months than Yuan Shih-kai, that we should regret to see him jeopardize his country's future by a false or premature move. Indeed, the better course might conceivably be to refuse office for some time longer. Every thing points to the Central Government's being obliged to contract a loan to enable it to carry on the administration. The first step is apparently being taken by H. E. Liang Tun-yen who is credited with a mission abroad to raise a loan of some Tls. 12,000,000 for the purpose of establishing a bank. With such loans will be introduced some measure of foreign supervision, and the initial steps in this direction may prove most unpopular. Unless Yuan Shih-kai could count on absolute freedom from Court and official intrigue, it might be wiser for him not to accept office until these loans have been negotiated. If, on the other hand, he can be sure of himself and of his position, it would be better to have a voice in the disposal of the money that is absolutely necessary for carrying out the numerous reforms to which the Government has pledged itself."

OBITUARY

The news of the death of Mr. William C. Cowie, Chairman and Managing Director of the British North Borneo Company, September 14th, at the age of 62 years, was a severe shock to the many friends of the British North Borneo pioneer. The *London and China Express* pays a warm tribute to the memory of the deceased which we quote in part:

"Mr. Cowie, who has been associated with Borneo for very nearly forty years, has been a director of the Chartered Company for many years, has been managing director for about a decade, but has only held the position of Chairman of the Court of Directors for rather less than a year. His colleagues elected him to this position because of the grasp he had of the company's affairs and the labour he had ungrudgingly given—in season and out of season, it may be remarked—to foster the development of the 30,000 square miles of territory owned by the company. His energy and his extremely sanguine temperament were assets of great value in formulating schemes for the material progress of the country. When he was elected chairman in October of last year it was generally conceded that he had fairly earned the distinction. Mr. Cowie was also on the boards of the Beaufort Borneo Rubber Company, the British North Borneo Exploration Company, Langkon North Borneo Rubber, Manchester North Borneo Rubber, Membakut Rubber, and North Borneo State Rubber. He had had a most adventurous life. He was manager of the Wardmill Works at Arbroath of Messrs. M. C. Thomson and Co., Glasgow. Mr. Cowie, having finished his apprenticeship at Arbroath, went to Glasgow, where he afterwards shipped as chief engineer on board a small steamer, named the *Argyle*, bound for Singapore. This was at the age of 19. He entered the service of the Sultan of Rhio and Linga to whom the *Argyle* had been sold. Afterwards in partnership with a merchant named Shomburgk, he traded in the Sulu Archipelago, the Labuan Trading Company being formed by them.

"It will be unnecessary here to detail the part taken by Mr. Cowie in the various steps by which North Borneo became British. Mr. (Rajah) Torrey, an American, was the first on the scene, then followed the late Baron Overbeck (a partner in Dent and Co.), and Mr. (now Sir) Alfred Dent is another name that will occur, but it was Mr. Cowie's influence with the Sultans of Brunei and Sulu that was a chief factor in that stage. In those early pioneering days, head-hunting, piracy, and slavery were rampant, and, we hope, received their quietus with the death of Mat Salleh. Life and property were absolutely insecure, and chaos reigned supreme throughout the land. Now, it is claimed, the Chartered Company's territory is a model colony, and life and property are as safe there as they are in any other part of the British Empire.

"Owing to strenuous efforts of the late Mr Cowie, and his indefatigable work, the net revenue has greatly increased, and with the capital now being poured into the country through the creation of a number of rubber planting companies, a new vista has been opened. The results of this policy, so largely fostered by Mr. Cowie, he has not been spared to see; he was only destined to know that both from an Imperial point of view, and also as affording a splendid field for the profitable employment of British surplus capital, North Borneo had received some part of the recognition that its capabilities merited."

REVIEWS

Desk Book, prepared under the direction of John S. Leech, Director of Printing, Manila, and compiled by a committee of employees consisting of Messrs. Samuel H. Musick, Walter R. Johns, and Walter F. McLennan.

"Desk Book" is a significant title to all editors and printers, but we have yet to review a compilation that covers the field of constructive typography more comprehensively. The volume itself is typographically, as model, the best recommendation of the excellent compilation of modern type styles and their application by demonstration presented in the most attractive form. It is an education in itself. Authors, bookbinders, compositors, copyholders, imposers, photo engravers, pressmen, proof readers, requisitioners, stereotypers and electrotypers have been provided with a fund of technical information that will prove of inestimable value in securing expedition and thoroughness in their work. Besides the above, a manual of style and a compilation of useful information is included that deserves especial commendation.

This work was compiled for the guidance of the officials and employees of the Bureau of Printing, Manila, but it might well be utilized to great advantage as a compendium of practical information by every modern publishing house. We regret that the work has not been put on sale as we believe it would be warmly welcomed by every editor, publisher and printer to whom the beautiful in typography makes special appeal.

Who's Who in Mining and Metallurgy for 1910.—Issued from the presses of the *Mining Journal*, London. Price 15s. net.

The second edition of this valuable work maintains the high standard of its initial form and may be said to be the most complete and reliable epitome of the world's mining industry. "Who's Who in Mining and Metallurgy" is a brave departure involving an enormous responsibility and much hard work, but its reception has fully rewarded the editors and publishers. It should find a place in every public library and no one interested in the large field of mining should fail to keep it among his collection of books of reference.

Paulino, a Tale of the Philippines, by George A. Miller.—The Methodist Publishing House, Manila.

This brochure deals with the religious situation in the Philippines, with special reference to the reception by the natives of the separation of church and state upon American occupation. The author includes some graceful pen pictures of native life and customs and weaves into his work the romance of two lowly characters who pass through many trials not disassociated with spiritual perplexities and persecutions, to live happily ever after.

Concrete from Sand Molds.—By A. A. Houghton, author of "Ornamental Concrete, Without Molds," "Practical Use of Concrete," etc., the Norman W. Henley Publishing Co., New York. Price, $2.00 U. S. C.

This work includes fifteen chapters devoted to the process of molding concrete with sand molds and demonstrating the ease, rapidity and economy of the process. It also covers the field in detail with regard to ornamental designs, involving a process that has hitherto been regarded as a trade secret.

RAILWAYS OF THE PHILIPPINES FOR 1910

In concluding his report covering the fiscal year ended June 30th, 1910 Mr. Loomis F. Goodale, Supervising Railway Expert for the Philippine Government, says:

"The increased and increasing prosperity of the islands is reflected by the results of the operation of the rail lines shown by the increasing incomplete reports herein, and the indications are that much more satisfactory returns will be made for the fiscal year, 1911."

The following excerpts from Mr. Goodale's report indicate the progress made during the twelve months and the tables accompanying them will be of interest:

LEGISLATIVE OR ADMINISTRATIVE ACTS DURING THE YEAR RELATING TO OR AFFECTING RAILROADS.

Manila Railroad Company.—Act No. 1905, enacted by the Philippine Legislature on May 19, 1909, covering guaranty of interest on the bonds of the Manila Railroad Company on its lines south of Manila, the Baguio line and the New Port line at Manila, was formally accepted by the Manila Railroad Company on August 2, 1909, and said Act became fully effective on January 28, 1910, when the Honorable, the Secretary of War of the United States approved the waiver of the lien of the then existing mortgages on the Southern Lines of the Manila Railroad, as required by Act No. 1905.

Philippine Railway Company.—On application being made by this Company on August 23, 1909, for an extension of the time for filing final plans of its lines on the Islands of Panay and Negros, the Acting Governor-General, on September 20, 1909, extended this time indefinitely, with the proviso that these plans shall be submitted for approval within thirty days after they have been requested by the Government.

GENERAL REVIEW.

The condition of construction, the results of operation, and statistics in relation to the Railroads of the Philippine Islands on June 30, 1910, and for the fiscal year ended June 30, 1910, unless otherwise shown, are given below.

MANILA RAILROAD COMPANY.

Construction.

During the fiscal year 38.4 kilometers of grading were completed; 34.6 kilometers of track laid, and 27.4 kilometers of line put in operation.

In detail, progress from the beginning of work under Acts No. 1510 and 1905 to July 1, 1910, is as follows:

Dagupan-San Fernando Line (Port Line, San Fernando.)

Total length of line....73.8 kilometers.
All of which has been located and the plans approved by the Governor-General.
Grading completed....53.3 kilometers.
Track laid....43.9 kilometers.
Length of line in operation....43.0 kilometers.
Opened for operation during the year:
Agoo to South Aringay, July 26, 1909.... 6.4 kilometers.
Track yet to lay....29.9 kilometers.

Camp One Line.

Total length of line....20.5 kilometers.
This line was opened for operation to near Camp One March 23, 1908....19.4 kilometers.

Baguio Line.

No work of any kind has been done on this line.

Paniqui-Tayug Line.

Total length of line....48.7 kilometers.
Surveys completed....48.7 kilometers.
Plans presented for approval of Government....34.0 kilometers.
Location approved by Governor-General....34.0 kilometers.
Grading completed....34.0 kilometers.
Track laid....15.0 kilometers.
Track yet to lay....33.7 kilometers.
No track has been laid on this line during the year. It was opened for operation.
Paniqui to Cuyapo June 30, 1908....15.0 kilometers

San Miguel-La Paz Line.

Total length of line....18.4 kilometers
Nothing has been done on this line during the year.
Line has been located but will probably be revised.

Dau-Magalang Line.

Total length of line.... 9.0 kilometers.
This line is entirely completed and was opened for operation on December 20, 1907.

San Fernando-Florida Blanca Line.

Total length of line....24.5 kilometers.
This line is entirely completed and was opened for operation April 10, 1908.

San Fernando-Arayat Line.

Total length of line....20.0 kilometers
Surveys have been completed and the location approved by the Governor-General, but no work of construction has been done.

Mariquina-Montalban Line.

Total length of line....12.9 kilometers.
This line is entirely completed and was put in operation April 17, 1907.

Antipolo Line.

Total length of line covered by Act No. 1510.... 9.4 kilometers.
This line is entirely completed and was opened for operation on December 24, 1908.

New Port Line, Manila.

Preliminary surveys only have been made on this line.

Belt Line, Manila.

Total length of line, (3.0 kilometers double track.... 9.6 kilometers
This line is entirely completed and single line was put in operation in April, 1908.
That portion of Belt Line which, under Act No. 1905 forms part of the "Southern Lines" will hereafter be included in the Batangas Line, or the Main Line South.

Batangas Line.—(Batangas to Bauan; Port Line, Batangas; Camp McGrath Spur.)

Total length of lines....112.3 kilometers.
Surveys completed....102.6 kilometers.
Plans presented for approval of Government....102.6 kilometers.
Location approved by Governor-General....102.6 kilometers.
Grading completed....86.2 kilometers.
Track laid....78.7 kilometers.
Total line opened....75.4 kilometers.
Line opened during the year:
Maquiling to Santo Tomas, Sept 8, 1909.... 4.8 kilometers.
Santo Tomas to Tanauan, January 8, 1910.... 3.0 kilometers.
Tanauan to Santo Toribio, June 4, 1910....13.1 kilometers.
Track yet to lay....33.6 kilometers.

Cavite Line.—(Wyes at Binacayan.)

Total length of line....32.7 kilometers.
Surveys completed....32.2 kilometers.
Plans presented for approval of Government....32.2 kilometers.
Location approved by Governor-General....32.2 kilometers.
Grading completed....32.2 kilometers.
Track laid....32.2 kilometers.
Line opened to San Roque, May 24, 1908....32.2 kilometers.
Owing to change of the initial point of this line at Paco in connection with Act No. 1905, length of line has been increased 0.2 kilometer.

CYANIDING IN THE PHILIPPINES

(*Continued from page 166.*)

the tailings from stamps after amalgamation. The principal point of difference is that it had six leachers of 50 tons capacity, where the Consolidated mill originally had four of 60 tons capacity. The character of the ore treated in the Bua mill is entirely different from that of the Consolidated, for, while the former is quartz and iron pyrites, with strong acid reaction and high values in slimes after crushing, the latter is chiefly calcite and rhodochrosite with more or less black oxide of manganese, the whole having a distinctly alkaline reaction, and giving a slime, on crushing, of low value. The treatment has therefore been simpler, and the results generally better on this ore.

The chief improvement which has been worked out on the Bua treatment since its inception has been the practice of turning the charge over by hand after the water has been drained off and before the solution has been put on. This is done by beginning near one edge of the tank and shoveling back crescent shaped sections and then with opening to start with turning over the material clear across the tank. With cheap labor, the cost is slight, four Igorots at 25 cents gold turning over 50-ton charge in a day. It is claimed that it increases the extraction by several per cent. and shortens the period of treatment by two or three days.

The Bua product has always been high grade and clean, owing to the absence of copper in the ore and a solution fairly free from salts. While actual operations on a commercial scale have been limited to the two properties mentioned, yet extensive tests on lots of ores from several properties in Masbate have invariably given high extraction results by fine grinding, agitation and filtration, but poor results from leaching. The all-sliming method would seem to have a wider application than leaching in all the districts where cyaniding is applicable to all in the one case where leaching has been given good results, it is an open question whether, with cheap water power available, fine grinding would not give returns sufficiently better to more than pay the difference in cost.

Cyaniding will probably not be successfully applied to the ores of the Paracale district, because these as a rule contain considerable amount of base metals, and gold is coarse, both of which conditions are against cyaniding. However, it is probable that further deposits of ore in which the gold is finely divided will be found in the islands and if such deposits are free from copper and other deleterious substances, and are fairly large, so as to assure a good tonnage, they will not need to be high grade in order to be worked at a profit by the cyanide process in its present highly developed state.

Naic Line.—(Wyes at Noveleta.)

Total length of line	19.9 kilometers.
Survey completed	19.9 kilometers.
Plans presented for approval of Government	19.9 kilometers.
Location approved by Governor-General	19.9 kilometers.
Grading completed	12.3 kilometers.
Track laid	None.

Calamba-Santa Cruz-Magdalena Line.

Total length of line	48.3 kilometers.
Survey completed	15.3 kilometers.
Plans presented for approval of Government	15.3 kilometers.
Location approved by Governor-General	15.3 kilometers.
Grading completed	15.3 kilometers.
Track laid	8.4 kilometers.
Line opened	None.
Track yet to lay	39.9 kilometers.

Santo Tomas (Luta) Lucena Line.

Total length of line	63.2 kilometers.
Survey completed	63.2 kilometers.
Plans presented for approval of Government	63.2 kilometers.
Location approved by Governor-General	63.2 kilometers.
Grading completed	12.0 kilometers.
Track laid	2.4 kilometers.
Line opened	None.
Track yet to lay	60.8 kilometers.

Lucena-Nueva Caceres Line.

Total length of line, (approximate) .... 228.3 kilometers.
Nothing has yet been done on this line.

Legaspi-Nueva Caceres Line.—(Legaspi to Tabaco; Legaspi Port Line; Tabaco Port Line; Ligao East; Tabaco West; Pili to Lagonoy.)

Total length of line, (approximate)	191.4 kilometers.
Surveys completed	102.6 kilometers.
Plans presented for approval of Government	80.9 kilometers.
Location approved by Governor-General	31.0 kilometers.
Grading completed	16.0 kilometers.
Track laid	1.0 kilometer.
Line opened	None.

Under Act No. 1510 the Manila Railroad Company was required to have 240 kilometers of its lines completed on September 12, 1909. As a matter of record 235.1 kilometers had been completed on that date.

Act No. 1905 extends the time of completion of the lines covered by Acts No. 1510, 1714 and 1905 to September 12, 1918.

At the end of the fiscal year 1910 there remained to be completed approximately 732.5 kilometers of line, which will require the construction of about 90.0 kilometers per year to fulfill this condition of the contract.

PHILIPPINE RAILWAY COMPANY.

Island of Cebu.—Construction.—The work of construction on this Island, nearly completed more than a year ago, has not yet been entirely finished. There remains to be charged to construction account, so far as known at present, additional stores, additional equipment, the finishing of three station lay-outs recently approved, the reconstruction of the water supply at Argao and Carcar, the construction of the second track to the wharf at Cebu, which latter work will probably not be required for some years, and the construction of two warehouses and a track to the sea at Argao, which work, although approved, will probably not be done.

Certificates for the issuance of bonds for the construction of the railroad line on this Island to the end of the fiscal year have been made as follows:

Date of Certification	First Bond Section 32.2 kilometers	Second and Partial Bond Sections 63.4 kilometers	Total
Previous fiscal years	$1,443,000.00	$1,597,000.00	$3,040,000.00
April 9, 1910	40,000.00	112,000.00	152,000.00
Totals	$1,483,000.00	$1,709,000.00	$3,192,000.00

The above values are in United States currency.

As the length of this line is 59.4 miles (95.6 kilometers) bonds have been issued at the rate of $53,737.38 per mile, or ₱66,778.24 per kilometer.

Island of Panay.—Location.—Except for the terminal at Batan, the location of the line on this Island has been presented and approved.

Grading and Track Laying.—At the end of the fiscal year the grade and track were preliminarily completed from Iloilo north 87.2 kilometers (54.2 miles) and from Capiz south 14.3 kilometers (8.9 miles), with the remainder of grade between the completed portions approximately 90% done, leaving 14.8 kilometers (9.2 miles) of uncompleted grade and track between the terminals mentioned, with the probability of very little delay to the track work, except at bridges.

General.—Permanent bridge structures have been completed, with few exceptions, from Iloilo north 78.8 kilometers (49.0 miles); final ballasting has been completed from Iloilo north 68.4 kilometers (42.5 miles), and permanent station buildings have been completed (except at Iloilo) from the same terminal for 83.3 kilometers (51.8 miles), with the terminal buildings at Capiz practically finished.

The work of constructing the terminal at Lapus (Iloilo) so far as at present contemplated, is completed, except a comparatively small amount of earthwork filling, the passenger terminal, and wharves for the store and freight houses.

The line between Iloilo and Capiz should be preliminarily completed not later than October 1, 1910, and finally completed by January 1, 1911.

Bonds.—Certificates for the issuance of bonds for the construction of the line on this Island have been made as follows:

Date of Certification	First Bond Section 32.2 kilometers	Second Bond Section 32.2 kilometers	Total.
Previous fiscal years	$1,732,000.00	$1,108,000.00	$2,840,000.00
January 6, 1910	94,000.00	210,000.00	304,000.00
April 9, 1910	66,000.00	37,000.00	103,000.00
Totals	$1,892,000.00	$1,355,000.00	$3,247,000.00

The above values are in United States currency.

Bonds have therefore been issued in the amount of $81,175.00 per mile for the forty miles bonded, or ₱100,838.51 per kilometer.

With the completion and bonding of the remainder of the line the cost per unit of length should be reduced considerably.

Island of Negros.—The location of the line on this Island has been approved by the Governor-General, except for the terminal at Bacolod, no construction work having been done.

The total amount of grading completed during the year was 30.2 kilometers (18.4 miles), and track laid during the same period 32.1 kilometers (20.0 miles).

Operation.—In addition to the 95.6 kilometers (59.4 miles) in full commercial operation during the year on the Island of Cebu, there were 71.1 kilometers (44.2 miles) technically in construction-operation, with a total of 96.5 kilometers (60.0 miles) in actual construction-operation on the Island of Panay at the end of the year; the average length in construction-operation being about 74.7 kilometers (46.6 miles).

STATEMENT.

Showing Distribution of Rolling Stock as of June 30, 1910

	Cebu Division	*Panay Division*	*Total.*
Locomotives.			
Class "A" (50 Tonne)	1	3	4
Class "B" (35 Tonne)	4	4	8
Class "C" (14 Tonne)*	0	3	3
	5	10	15
Passenger Cars.			
Combination 1st Class and Parlor Car	0	1	1
Combination 1st and 2nd Class Coach	4	@ 2	% 6
Combination Baggage and 2nd Class Coach	3	? 2	5
Second Class Coaches	6	5	11
20 Tonne Market Cars	6	6	12
30 Tonne Market Cars	3	0	3
Small Iligan Cars	0	2	(a) 2
	22	18	40
Revenue Freight Cars.			
7 Tonne Box Cars	0	4	(a) 4
10 Tonne Flat Cars	2	11	13
20 Tonne Flat Cars	1	4	5
30 Tonne Flat Cars	0	22	22
40 Tonne Flat Cars	8	38	46
10 Tonne Box Cars	7	16	23
20 Tonne Box Cars	13	9	22
10 Tonne Stock Cars	2	2	4
20 Tonne Stock Car	0	1	1
	33	107	140
Work Cars.			
40 Tonne Flat Cars (Derricks)	1	2	3
40 Tonne Flat Car (Pile Driver)	0	1	1
30 Tonne Roger Ballast Cars	15	47	62
	16	50	66

(a) Cars from Iligan Military Line, Purchased Locally.
* Dutch Locomotives Purchased Locally.
@ Two Converted From Second Class Coaches.
% One Converted From Second Class Coach.
? One Converted From Second Class Coach.

Equipment Originally Purchased.

4 Locomotives, Class "A" (50 Tonne).
8 Locomotives, Class "B" (35 Tonne).
4 Combination 1st Class and Parlor Cars.
4 Combination Baggage and 2nd Class Coaches
15 Second Class Coaches.
40 Ten Tonne Cars.
40 Twenty Tonne Cars.
25 Thirty Tonne Cars.
50 Forty Tonne Cars.
62 Thirty Tonne Roger Ballast Cars.

Some reductions have been made in the freight rates during the year and on July 20, 1909, a third class passenger rate of one and one-half centavos per kilometer was put in effect, all of which has been productive of good results, and it is believed that further reductions, particularly in freight rates would be of benefit.

Seeds, plants, agricultural implements and machinery, when for the use of the inhabitants along the line, have been transported without charge since July 6, 1909.

As heretofore, it is noted that a much larger area placed under cultivation follows the extension of railway lines, and it is hoped and expected that the additional earnings resulting therefrom will, in a few years time by economical management, be sufficient to pay operating expenses and at least a portion of the heavy fixed charges.

DAET TRAMWAYS.

This company operates a line 7.24 kilometers connecting Daet and Mercedes in the Camarines. Carabao are used for motor power and the traffic is largely in hemp and passengers. During the year, according to Mr. Gocdale's report, 15,000 passengers and 6,131 tons of freight were transported.

The total revenue for the year 1910 amounted to ₱20,651.66, an increase of ₱3,713.26 over the previous year, while the operating expenses amounted to ₱14,179.37, an increase of ₱1,636.64 over the previous year. The net income amounted to ₱6,472.29, an increase cf ₱2,076.62. The percentage of operating expenses to operating revenue was 68 in 1910 as against 74 in 1909.

LENGTH OF LINES IN OPERATION.

Territory Covered	Kilometers. 1908 Main Line	1908 Sidings	1908 Total	On June 30, 1910. Main Line	On June 30, 1910. Sidings	On June 30, 1910. Total
Main Line:						
Manila to Dagupan	195.4	41.3	236.7	195.4	41.3	236.7
Cabanatuan Branch:						
Bigaa to Cabanatuan	91.5	8.0	99.5	91.5	8.0	99.5
Antipolo Branch:						
Manila to Antipolo	33.9	4.2	38.1	33.9	4.2	38.1
Mariquina Branch:						
Rosario to Montalban	17.5	1.2	18.7	17.5	1.2	18.7
Stotsenberg Branch:						
Dau to Stotsenberg	7.0	1.3	8.3	7.0	1.3	8.3
Dau-San Pedro-Magalang Branch:						
Dau to San Pedro Magalang	9.0	1.2	10.2	9.0	1.2	10.2
Florida Blanca Branch:						
San Fernando to Florida Blanca	24.5	2.9	27.4	24.5	2.9	27.4
Camp One Branch:						
San Fabian to Camp One	19.5	1.5	21.0	19.5	1.5	21.0
San Fernando Union Line:						
Dagupan to South Aringay	36.5	3.3	39.8	43.0	....	43.0
Cavite Branch:						
Paco to San Roque	32.0	3.6	35 6	32.2	3.6	35.8
Tayug Branch:						
Paniqui to Cuyapo	15.0	1.1	16.1	15.0	1.1	16.1
Batangas Line including Belt:						
Santa Mesa to Santo Toribio	41.0	4.2	45.2	78.5	....	78.5
Totals	522.8	73.8	596.6	567.0	66.3	633.3

There was no change in length of operated lines during the calendar year 1909.

No rail was relaid on operated lines, and but little permanent bridge work was done during the year.

Track was kept in excellent condition.

The *results of operation* for the calendar years of 1908 and 1909 were as follows·

REVENUE FROM TRANSPORTATION (*a*).

	1908	1909	Decrease	Increase
Freight Revenue.	₱741,846.12	₱783,571.47		₱41,725.35
Passenger Revenue	1,352,029.58	1,220,006.27	œ132,023.31	
Mail Revenue	28,761.61	17,827 67	10,933.94	
Miscellaneous		13,620.34		13,620.34
Totals	₱2,122,637.31	₱2,035,025.75	₱87,611.56	

REVENUE FROM OPERATION OTHER THAN TRANSPORTATION (*a*)

	1908	1909	Decrease	Increase
Station and train privileges	In Rents.	₱4,196.32		₱4,196.32
Storage of Freight	In Freight.	1,075.00		1,075.00
Storage of Baggage	In Freight.	11.66		11.66
Rents of buildings and property	₱30,100.97	4,944.08	₱25,156.89	
Miscellaneous		2,370.89		2,370.89
Totals	₱30,100.97	₱12,597.95	₱17,503.02	

(*a*) For the main line, Manila to Dagupan, and the Cabanatuan Antipolo, Mariquina and Stotsenberg Branches only.

OPERATING EXPENSES (*a*).

	1908	1909	Decrease	Increase
Maintenance of Way and Structures	₱240,046.53	₱229,901.96	₱10,144.57	
Maintenance of Equipment	385,625.41	122,913.88	262,711.53	
Traffic Expenses.. } Transportation Expenses }	270,741.46	18,313.54 / 444,460.37		} ₱192,032.45
General Expenses	115,345.85	85,190.04	30,155.81	
Totals	₱1,011,759.25	₱900,779.79	₱100,979.46	

OPERATING INCOME (*a*).

	1908	1909	Decrease	Increase
Total Operating Revenue	₱2,152,738.28	₱2,047,623.70	₱105,114.58	
Total Operating Expenses	1,011,759.25	900,779.79	110,979.46	
Net Operating Revenue	₱1,140,979.03	₱1,146,843.91		₱5,864.88
Taxes	15,536.91	10,238.09	₱5,298.82	
Operating income	₱1,125,442.12	₱1,136,605.82		₱11,163.70
Percentage of Operating Expenses to Gross Operating Revenue	47.0	44.0	3.0	

(*a*) For the main line, Manila to Dagupan, and the Cabanatuan, Antipolo, Mariquina and Stotsenberg Branches only.

	1908	1909	Decrease	Increase
Passenger revenue per train kilometer	₱1.168	₱1.633		₱0.465
Freight revenue per train kilometer	3.087	3.185		0.098
Total revenue per train kilometer	₱1.493	₱2.049		₱0.556
Operating expenses per train kilometer	0.712	0.907		0.951
Net revenue per train kilometer	₱0.781	₱1.142		₱0.361
Passenger revenue per kilometer cf line	₱4,113.17	₱3,559.99	₱553.18	
Freight revenue per kilometer of line	2,209.85	2,286.47		₱76.62
Miscellaneous revenue per kilometer of line	89.67	91.76		2.09
Total revenue per kilometer of line	₱6,412.69	₱5,938.22	₱474.47	
Operating expenses per kilometer of line	3,013.88	2,628.48	385.40	
Net revenue per kilometer cf line	₱3,398.81	₱3,309.74	₱89.07	
Average amount received per kilometer per passenger	₱0.0202	₱0.0211		₱0.0009
Average amount received per passenger	0.5088	0.6000		0.0912
Average amount received per tonne of freight per kilometer	0.0302	0.0342		0.0040
Average amount received per tonne of freight	2.3052	2.1952	₱0.1100	
Average haul per passenger, kilometers	25.00	28.58		3.58
Average haul per tonne of freight, kilometers	76 00	65.86	10.14	
Passengers hauled one kilometer	58,276,903	57,780,190	496.713	
Tonnes of freight hauled one kilometer	19,253,495	22,912,071		3,658,576

The *equipment* of this line was:

	1908	1909	Decrease	Increase
Passenger and freight engines	72	88		16
First class passenger cars	9	9		
First and second class passenger cars	10	25		15
Second class passenger cars	10	10		
Third class passenger cars	86	91		5
Inspection cars	2	3		1
Freight cars	1046	1955		9
Miscellaneous cars	67	53	14	

Accidents during the year were:
82 Class A, serious;
36 Class B, not serious; and
118 Class C, minor.

In addition to minor interruptions to the traffic of the line on account of washouts, serious trouble was occasioned by the "baguios" of October 17th and 24th, 1909, operation being suspended for some days on the line north and south of Dagupan, and for some weeks on the line to Camp One.

NOTE.—The report of the operation of the Manila Railroad Company is for the year ended December 31, 1909.

The Dau-San Pedro Magalang and the Florida Blanca Branches of this Railroad were placed in full commercial operation on January 1, 1910, prior to which time these branches had been in construction-operation, the cost of and earnings from operation having been charged and credited to construction account.

None of the guaranteed lines under Act No. 1905 had been placed in full commercial operation at the end of the fiscal year. It is the intention to do so, however, as of May 1, 1910, on the first three bond sections (forty miles of the Batangas Line and twenty miles of the Cavite Line) when authority to issue bonds on these sections is requested, which is expected to be about July 15, 1910.

The results obtained from the construction-operation of guaranteed lines preliminary completed indicate that their earnings will be sufficient to not only pay operating charges, but to care for the interest on bonded indebtedness.

MANILA ELECTRIC RAILROAD AND LIGHT COMPANY AND MANILA SUBURBAN RAILWAYS COMPANY.

Construction.—No work of construction has been done during the year.

Operation.—The results of operation of these lines for the fiscal years 1909 and 1910 were as follows:

Manila Electric Railroad and Light Company.—Kilometrage of Lines in Operation.

	Fiscal year 1909				Fiscal Year 1910.			
	Main Line	Second Track	Sidings	Total	Main Line	Second Track	Sidings	Total
Kilometrage	39.8	17.2	6.2	63.2	39.8	17.2	6.2	63.2

Operating Revenue.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Revenue from Transportation	₱ 948,822.97	₱1,040,303.86		₱91,480.89
Miscellaneous Revenue	77,553.23	84,308.45		6,755.22
Totals	₱1,026,376.20	₱1,124,612.31		₱98,236.11

Operating Expenses.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Maintenance of Way and Structures	₱ 80,502.83	₱56,151.40	₱24,351.43	
Maintenance of Equipment	94,810.22	113,107.40		₱18,297.18
Traffic and Transportation Expenses	211,286.06	229,060.14		17,774.08
Miscellaneous Expenses	Not given.	207,892.40*	....	....
Totals	₱ 594,662.78*	₱ 606,211.34*		₱11,548.56*
Operating income	₱ 431,713.42	₱ 518,400.97		₱86,687.55
Percentage of Operating Expenses to Gross Revenue	57.9	53.9	4.0	

*Estimated.

General Information.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Total number of paying passengers carried	10,437,841	12,379,248		1,941,407
Average earnings per passenger	₱0.0980	₱0.0908	₱0.0072	
Average expense per passenger	0.0570	0.0489	0.0081	
Net earnings per passenger	₱0.0410	₱0.0419		₱0.0009
Equipment consisted of				
Motor cars	105	105		
Work cars	1	1		
Wrecking cars	1	1		
Water sprinklers	1	1		

MANILA SUBURBAN RAILWAYS COMPANY.

Kilometrage of Lines in Operation.

	Fiscal Year 1909				Fiscal Year 1910			
	Main Line	Second Track	Sidings	Total	Main Line	Second Track	Sidings	Total
Kilometrage	9.9	....	1.7	11.6	9.9	....	1.7	11.6

Operating Revenue.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Revenue from Transportation	₱189,212.70	₱214,631.52		₱25,418.82
Miscellaneous Revenue	1,543.30	1,038.88	₱ 504.42	
Totals	₱190,756.00	₱215,670.40		₱24,914.40

Operating Expenses.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Maintenance of Way and Structures	₱ 8,856.36	₱ 26,002.68		₱17,146.32
Maintenance of Equipment	527.91	142.46	₱ 385.45	
Traffic and Transportation Expenses	Valueless.	24,451.86	....	....
Miscellaneous Expenses	Valueless.	72,844.22*	....	....
Totals	₱ 95,823.99	₱123,441.22*		₱27,617.23
Operating income	₱ 94,932.01	₱ 92,229.18	₱ 2,702.83	
Percentage of Operating Expenses to Gross Revenue	50.2	57.3		7.1

*Estimated.

General Information.

	F. Y. 1909	F. Y. 1910	Decrease	Increase
Total number of paying passengers carried	2,702,227	3,173,692		471,465
Average earnings per passenger	₱0.0700	₱0.0679	₱0.0021	
Average expenses per passenger	0.0350	0.0388		₱0.0038
Average net earnings per passenger	₱0.0350	₱0.0291	₱0.0059	
Equipment consisted of				
Motor cars	6	6		
Motor cars, freight	3	3		
Flat cars	4	4		

A summary of the grading and track laying completed, with kilometrage of lines put in operation during the year, is shown in the following table:

ROAD.	KILOMETERS Grading Completed	Track Laid	Lines Opened
Manila Railroad Company	38.4	34.6	27.4
Manila Electric Railroad and Light Company	....	....	....
Manila Suburban Railways Company	....	....	....
Tarlac Railway Company	....	....	....
Daet Tramway Company	....	....	....
Philippine Railway Company	30.2	32.1	8.1
Insular Coal Company	....	....	....
Totals	68.6	66.7	35.5

The following table gives kilometrage of railroad lines authorized by law in the Philippine Islands, with the length constructed, to be constructed, and in operation on June 30, 1910.

ROAD.	Authorized	Constructed in operation	Constructed not in operation	To be constructed
Manila Railroad Company	1,315.5a	567.0	16.0	732.5a
Manila Electric Railroad and Light Company	45.0	39.8	....	5.2
Manila Suburban Railways Co.	19.9	9.9	....	10.0
Tarlac Railway Company	20.6	20.6	....	....
Daet Tramway Company	7.2	7.2	....	....
Philippine Railway Company	368.6	168.1	29.0	171.5
Insular Coal Company	12.0	12.0	....	....
Totals	1,788.8	824.6	45.0	919.2

a Approximate.

Of the "Northern System" lines of the Manila Railroad Company 457.2 kilometers have been built, leaving 103.1 kilometers yet to build: of the "Southern System" lines 125.8 kilometers have been built, leaving 629.4 kilometesr yet to build.

CONTRACTING NEWS

Bids Opened.—Bureau of Public Works, Manila.—A two 23-meter span reinforced concrete bridge.—The bidders were: P. Corona and A. Luraschi, ₱39,489; F. D. Hayden, ₱40,412; John Gordon, ₱43,900; A. F. Allen, ₱48,500; the Atlantic, Gulf and Pacific Company, ₱55,634; and the Manila Construction Company, ₱57,352.

A two 7-meter span reinforced concrete bridge.—Bidders were: F. D. Hayden, ₱8,500; P. Corona and A. Luraschi, ₱8,483; Macchetti Brothers, ₱8,777; Manila Construction Company, ₱9,790; and John Gordon, ₱9,400.

Girder bridge of five 5.86 meter spans on reinforced pile bents.—Bidders were: A. F. Allen, ₱11,385 and Corona and Luraschi, ₱14,800.

Plumbing and equipment for Los Baños Laboratory.—Bidders: S. C. Choy, ₱3,900 for furnishing and equipment and ₱1,924 for the plumbing; John Gordon, ₱6,100 for furnishing and equipment, ₱2,250, plumbing; D. E. Blossom, ₱2,125 for plumbing; the American Hardware and Plumbing Company ₱2,804 for plumbing.

Erection of New Hospital Service Building, reinforced concrete.—Bidders: The Manila Saw Mill Company, ₱46,980, the work to be completed in 240 days with an additional cost of ₱165 for the covered passage; The Manila Construction Company ₱51,275, in 240 days; Coleman and Goodman ₱52,850 in 240 days; M. B. Zarate ₱54,400 in 250 days; O. F. Campbell ₱56,927 in 240 days; and John Gordon ₱58,700 in 250 days with an additional ₱110 for the covered passage.

Zamboanga Electric Light, Power and Water Supply.—There was only one bidder, the Zamboanga Company.

Proposals Invited.—Tientsin-Pukow Railway (Southern Section). Third Class Passenger Cars. Sealed tenders are invited for the supply to this Railway of twelve (12) third class passenger cars. Specification and Blue Prints of same may be obtained from the Railway Purchasing Agent, Taotai Y. C. Tong, Imperial Chinese Telegraphs, The Bund, Shanghai, on the payment of a fee of Dollars Twenty-five ($25.00) which amount will be returned, upon application to the Agent, on receipt of a bona-fide tender.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking, and should be clearly marked on the outside "Tender for Twelve Third Class Passenger Cars. Indent No. 104." They will be opened at the Head Office, Nanking, at 10 a. m., 1st December, 1910. No tenders submitted after the hour mentioned will be considered.

Tenderers are requested to carefully note the following conditions: All the Cars must be delivered "ex ship's slings" on the Railway Wharf at Pukow at Contractor's risk and cost, before end of June, 1911. A fine of Five Shillings per Car per day will be deducted from the contract price as liquidated damages for each day car or any part of it remains undelivered after the date mentioned. Customs Duty and Wharfage Dues at Pukow for Railway account, all other charges for Contractor's account.

Quotations must be in Sterling and the names of proposed makers must be stated. Payment will be made Twenty (20) days after complete acceptance of each shipment, in Shanghai or London at Contractor's option.

Public Works Department, Sydney, New South Wales.—Coal Loading Plant capable of delivering into ships' holds about 1,000 tons of coal per hour at each side of a new jetty to be erected at Port Kemble, South Coast, N.S.W. Contractors' Room, Public Works Department, Sydney; and Office of the Agent-General of New South Wales, London. Bids opened January 9th, 1911.

Chief Quartermaster, Philippines Division.—Puttees.—Sealed proposals, in triplicate, subject to the usual conditions, for furnishing 280,000 Pairs Woolen Puttees, will be received here until 11:00 a. m., November 1st, 1910, and then publicly opened. Information and blank forms furnished upon application.

Constabulary Clothing Supplies.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., December 17, 1910, and then opened in the presence of attending bidders for furnishing the Bureau of Constabulary the following articles:

6,000 khaki hats.
24,000 cotton undershirts.
7,500 spiral-cut khaki woolen puttees for enlisted men.
50,000 yards of khaki cloth.
Bids must be accompanied by samples.
Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

Bureau of Public Works, Manila.—Reinforced Concrete Bridges.—Sealed proposals plainly marked "Proposals for Abucay, Tapulao and Hermosa Bridges," will be received at this office or at the office of the Provincial Treasurer, Balanga, Bataan, P. I., until 11 a. m., November 6th, 1910, and then publicly opened for furnishing all material, labor and plant and constructing complete, three reinforced concrete girder bridges, consisting of three 5.5 meter spans on E. C. Pile bents; two 7.5 meter spans on R. C. Pile bents; and one 8 meter span, located in the Province of Bataan and known as the Abucay, Tapulac and Hermosa bridges respectively, in the manner and on the conditions set forth in the form of proposals, plans and specifications, copies of which with other information may be obtained at either of the above-mentioned offices.

Cebu Waterworks.—Sealed bids will be received by the Director of Public Works until 11:00 a. m., November 15, 1910, and thereupon opened, for the furnishing of material for and the construction of Osmeña Water Works System for the Municipality of Cebu, Cebu, Philippine Islands.

The proposed works will consist of a circular reinforced concrete dam with intake appurtenances and value chamber; a concrete spillway; a 4,000,000 gallon reservoir in excavation; a 14" and 16" main pipe line six and a half kilometers long; a distribution system 4" to 14" diameter pipe twenty one (21) kilometer long, and the necessary gates, valves, valve boxes, fire hydrants, and appurtenances.

Specifications, general plans, and blank forms of proposal may be obtained at the office of the Director of Public Works, Manila, P. I., and from the office of the District Engineer, Cebu, P. I.

Each proposal must be accompanied by a certified check for 10% of the amount of the bid drawn by the bidder on a local bank and made payable to the Insular Treasurer as a guaranty that the bidder, if awarded the contract, will, after due notification, promptly enter into contract and furnish acceptable bond in the sum of twenty (20) per cent or a certified check for ten (10) per cent of the sum total of the contract price for the faithful performance of the work.

The right is reserved to reject any and all bids or waive informalities.

Reinforced Concrete Hospital.—Sealed proposals, in triplicate, subject to the usual conditions, for the construction of Two Concrete Officers Quarters and a Concrete Hospital Ward at Fort William McKinley, P. I., will be received here until 11:00 a. m., October 31st, 1910, and then publicly opened.

Sale of Hull.—Sealed proposals, in duplicate, will be received at the Office of the Chief Quartermaster, Department of Mindanao, Zamboanga, P. I., until 3:00 p. m. December 7th, 1910, and then opened in the presence of attending bidders for the Hull of the Quartermaster Launch "Atlanta." Proposals must be accompanied by Certified Check, payable to the order of the Chief Quartermaster, Department of Mindanao, in the sum of ten (10%) per cent of the amount of bid. Information furnished upon application at this office. F. G. Hodgson, Assistant Quartermaster General, U. S. Army.

Bureau of Supply, Manila, P. I.—Hay and Oats.—Sealed proposals in triplicate will be received at this office up to 11 a. m. November 10th, 1910, when they will be opened in the presence of the attending bidders, for furnishing and delivering hay and oats.

School Supplies.—Sealed proposals in triplicate will be received at this office up to 11 a. m. November 25, 1910, when they will be opened in the presence of the attending bidders, for furnishing and delivering school supplies.

Proper forms and specifications may be had on application to this office.

Bureau of Philippine Constabulary.—Shoes.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., February 17, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

10,000 pairs of shoes.
Bids must be accompanied by samples.
Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

Puttees.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, until ten a. m., January 11, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary.

1,000 pairs of puttees, woolen, spiral, for officers.

Bids must be accompanied by samples.
Time for delivery to be stated on proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building.

As a guarantee of good faith each proposal will be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

FAR EASTERN RAILWAY NEWS

The Peking-Hankow Railway Loan.—It will be remembered that a loan for £5,000,000 was floated in 1908 for the redemption of this line and recently the announcement was made from Peking that the net earnings during the twenty months since the Government took it over amounted to Tls. 3,640,000. Now comes the report that a further loan of £450,000 has been issued, the proceeds of which will be utilized for repairing the line and adding new equipment. It is pointed out by several newspapers that the net profits are far from an adequate return on capital invested and that the necessity for the further loan to maintain the line in satisfactory condition reflects discredit on the system of operation in vogue which does not provide for proper upkeep within the earning capacity of the line. No official explanation of the conditions that made the loan necessary has been made public.

Japan's Railway Development.—It is the purpose of the Railway Bureau to supersede the narrow gauge by the standard as rapidly as possible, but it will grant permission for the construction of the smaller gauge by private corporations for the present.

A statue is to be erected in honor of the late Viscount Katsui Inouye who, as Director General of Government Railways, was identified with the rapid growth of intercommunication in the empire.

Workshops covering an area of 3,000,000 square feet are proposed by the Railway Bureau and will be located at a point near Tokyo. The present shops at Shimbashi will be included in this plant, and it is expected they will be opened about the beginning of 1913. These shops will turn out cars, equipment of all kinds and do general repair work.

Recent inspection by the Railway Bureau developed serious damage to railway ties on the different lines occasioned by the destructive work of white ants. An effort is being made to secure a preventative to be applied to all new timber used for this purpose.

Charters were granted last month for the construction of two light railways, one seven miles in length connecting Yoshina and Oyodo to cost 200,000 yen and the other about the same length joining Fukuyama and Tomonosu.

China's Projected Railways.—Mr. W. P. Ker, H. B. M. Attaché at Peking, gives the following list of projected lines with approximate mileage:

Kirin—Changchun (*Kuanchengtzu*) (*Chi-Chang*) *Railway*.—This line, the surveys for which are completed, will be 80 miles long; construction was to commence in the spring of this year.

Kirin—Hunchun Railway.—This line will be 240 miles long, and is to be undertaken on the completion of the Kirin—Changchun line.

Chinchowfu—Aigun Railway.—The preliminary agreement for this railway was signed in January, 1910, for American loan and British construction; the length of the line will be 750 miles.

Kalgan—Suiyuan (*Chang Sui*) *Railway*.—Preliminary surveys have begun on this line, which will be 180 miles in length, and the route will probably be *via* Tatungfu. Trains are expected to run as far as Tienchen (Shansi), a distance of 50 miles, in the spring of 1912, and an extension is intended later to Urga and Kiakhta.

Chengtingfu—Tehchow Railway (110 miles).—This line will connect the Peking—Hankow and Tientsin—Pukow railways.

Chefoo—Weihsien Railway (170 miles).—This line will connect Chefoo with the Shantung Railway. Progress is delayed for the want of funds.

Tatungfu—Puchowfu (*T'ung-P'u*) *Railway* (450 miles).—This railway will connect the north and centre of Shansi province with the Shensi Railway at Tungkwan, south of Puchowfu (see below). Only the construction of the section from Taiyuan to Pingyaohsien (60 miles) appears to be in immediate contemplation.

Tungkwan—Honanfu (*Hsi T'ung*) *Railway* (730 miles). This line was surveyed in 1909.

Sianfu—Tungkwan (*Lo-T'ung*) *Railway*. (85 miles).—This line was surveyed in 1909.

Sianfu—Lanchowfu Railway (80 miles).—This line was noted in the programme of the Board of Communications as to be surveyed in 1911, but the project is still somewhat indefinite.

Lanchowfu—Ilifu Railway (1,250 miles).—No definite arrangements have been made.

Kaifeng—Suchowfu Railway (175 miles).—This line was surveyed in 1909.

Suchowfu—Tsingkiangpu (*Ching-Hsu*) *Railway* (120 miles).—The construction of this line has been begun from Tsingkiangpu; it is intended to be completed in 1911.

Tsingkiangpu—Haichow (*Ching-Hai*) *Railway* (70 miles).—This last section is intended to provide an outlet to the sea for the great trunk line from west to east, which will be formed by the execution of projects 8, 9, 12 and 13 above noted, in addition to the existing line from Honanfu to Kaifeng.

Tsingkiangpu—Kwacho (*on the Yangtse opposite Chinkiang Railway* (more than 100 miles).

Sinyangchow—Fengyang or Pukow Railway (270 miles).

Chaochowfu or Swatow-via Waichow to Sheklung to Shunchun Railway (200 miles).—These are alternative projects for connecting Swatow with the Canton district and the Canton—Kowloon Railway.

Macao—Fatshan Railway (*on the Canton—Samshui line*) (75 miles).—A concession for this line was granted to a Portuguese syndicate in 1902.

Kweilin—Chuanchow (*Kwangsi*) *Railway* (80 miles).—Preliminary surveys were made for this railway in 1909, but owing to lack of funds construction has not begun.

Langson—Lungchow Railway (46 miles).—This is the proposed French extension, metre gauge, of the Hanoi—Langson line. It is proposed to continue this line to Nanning (150 miles.)

Yunnanfu—Szechuan Railway (450 miles).—To Suifu or Luchow. Two American engineers were engaged by the Viceroy of Yunnan to survey this line in 1909.

Bhamo—Tengyueh (*Tien-Mien*) *Railway* (123 miles).—Preliminary surveys have been completed; the line will be of 2 ft. 6 in. or metre gauge.

Siamese Royal State Railway.—The following excerpts from the report for 1909-10 are of interest:

Of all events during the year under report the most noteworthy were the inauguration of the sections Ban Dara-Utaradit-Pang Ton Pung and Ban Dara-Sawankaloke, as also the opening of the River Line, connecting Bangkok Terminus with the Menam river at Chong Non See.

Length of Line.

The new sections:

Ban Dara-Utaradit	28.2 Km.
Utaradit-Pang Ton Phung	24.3 Km.
Ban Dara-Sawankaloke	28.7 Km.
Totalling	81.2 Km.

were opened for traffic on 15th August, 1909, bringing the total length open to 926 Km., i. e. 774.6 of standard gauge (1.435) and 151.4 of meter gauge 926 meters total.

Average length during the year is 895.7 (803.3), increase against previous year 11.50%, leaving only 19 Km. of standard gauge (Pang Ton Phung to Meh Puak) to be completed and probably opened to traffic during the year 129.

The financial result of the working of the State Railways for the year 128 was a net gain to the state of Ticals 2,310,792 after meeting the working expenses and contribution to renovation fund. The gross receipts were Tcs. 4,303,962, an increase of Tcs. 114,978. The working expenses were Tcs. 1,706,202, an increase of Tcs. 48,265.

Though the average length of the line shows an increase of 11.50%, the gross-receipts comparatively have an increase only of 2.74%, which falling off can mostly be accounted for the sparseness of population in the newly opened districts.

Decrease in the percentage of expenditure to gross receipts is chiefly due to reduction of rates for daily labor. Increases are accountable partly to falling off of traffic receipts and partly to increase of the staff.

Passengers.—There were decreases totalling 165,554 in the number of tickets sold on the Sections Bangkok to Ban Phaji, Ban Phaji to Korat, Bangkok to Petriu, and Bangkok Noi to Petchaburi. The decrease in receipts on these sections amounted to Tcs. 103,067. There were increases on all the other sections totalling 163,376 in the number of tickets sold, and Tcs. 131,545 in receipts.

The increases on sections Ban Phaji to Paknampoh, Paknampoh to Pitsanuloke and Pitsanuloke to Bandara are evidently the signs of gradual development of traffic, and with regard to the increases on sections Ban Dara to Utaradit, Utaradit to Pang Ton Phung, and Ban Dara to Sawankaloke, these lines were not opened to traffic in 127.

The falling off on sections Bangkok to Ban Phaji, Ban Phaji to Korat, and Bangkok Noi to Petchaburi is probably accountable to depression of trade and general conditions of the business in the year under report, while the remarkable decrease on the Petriu line, attributes partly to the reason of competitive struggle of motor-boat traffic, in the canals to the north of the line, tapping thickly populated districts.

Other Coaching Traffic.—Luggage brought in Tcs. 2,079 more than in 127, and special trains and sundries Tcs. 66,989 less. The difference in the last item is due to the extraordinary military movements in 127.

Goods and Live Stock.—There were carried by the railways last year 106,350 tons of Paddy (an increase of 33,999 tons), 47,792 tons of Stone, 17,571 tons of Timber, 15,726 tons of Merchandise, 4,614 tons of Firewood, 4,476 tons of Salt, 2,976 tons of Kerosine Oil, 2,293 tons of Fish, 1,990 tons of Hides and Horns, 1,802 tons of rice, 1,537 tons of Iron 1,427 tons of cloth and clothes 1,019 tons of Liquor, 1,002 tons of Lime, 468 tons of Stick Lac and Gam Benjamin, 818 tons of Cement, 342 tons of Cotton, 225 tons of Coins, etc., etc. Including 3,921 tons of railway construction goods the total was 250,471 tons, and the receipts Tcs. 1,326,010. In addition there were carried 715 heads of horses, 4,286 cattle and 106,844 pigs.

Comparing the results of goods traffic (without regard to railway construction goods) with those of the previous year, an increase of 54,466 tons with an increase in receipts of Ticals 24,0643 is to be noted. Whereas the increase in tons amounts to 28 per cent the increase in receipts shows onlp 22 per cent due to the reduction in rates, which were enforced on and after the 15th January, 1910. From the above percentage of increase, paddy alone takes 17 per cent from the quantity and 13 per cent from the receipts.

Also for the goods rates the basis of sliding scale has been adopted and the reduction varies between 10 to 20 and more per cent, not throughout, but according to seasonal and economical conditions of the country. The new rates bid fair to be a success so far that certain commodities are transported now in much larger quantity than formerly and the receipts in goods traffic since the introduction of the new rates (7 months since) have increased by 5½ per cent in spite of the reduction.

New Works.—During the year under report 748,855 Ticals were expended under this head The River line was completed.

Extension, station yard Bangkok.—The new station hall near Hua Lampong bridge will be erected in year 129. New Workshop has already been in occupation affording extensive facilities all round. Vacuum Brakes have been installed on most of the carriages offering better security to traffic. Though not directly pertaining to this head, I may be allowed to mention that introduction of bogie carriages on long journeys on standard gauge lines has been looked upon as an improvement as they afford more comfortable traveling.

Riverline and Riverstation.—The steady increase of the goods traffic of the Korat and Northern lines made it advisable to provide in time for a new outlet of the traffic at Bangkok, the Klong Kutmai hardly affording sufficient place in the busy time of the year. It was therefore decided to provide for a new goods-station at the Menam Chow Phya some miles down the stream near Klong Thoy. A Royal Proclamation was issued on the 11th December 1905 granting to the Royal Railway Department the right of expropriating the land required for the construction of a branch line from Mackasan to the River and for a goods-station stretching along the river to an extent of 1100 m. and a width of 300 m. Works were commenced immediately after the Royal Proclamation having been issued and on the 15th February, 1910 the station was opened to traffic.

Expropriation.—The whole land expropriated with an area of 150806 square wahs was purchased for Tcs. 221,431 = Tcs. 1.46 per square wah. Special difficulty was met with in acquiring the land at riversite and lengthy arbitrations had to be gone through. An old Wat had to be shifted at an expense of 16,548 Tcs.

Earthwork.—The total of earthwork amounts to 67607 cbm for the branchline and 146106 cbm for the station = 214413 cbm in all at a cost of 164799 = Tcs. 0.76 per cbm. The earthwork includes the excavation of a klong on station ground of 1200 m. length 30 m. topwidth and 4.5 m. depth at high flood.

Bridges.—The branchline to the Riverstation is crossing 3 navigable klongs. Total cost of bridges amounts to 52040 Tcs.

Permanent way.—The permanent way is of the type of the Korat and Northern lines. Sleepers were cut in the Korat district and the ballast brought from the Railway quarries at Pak-Preo and Chongkeh. Including the Station-yard 10.2 km. tracks have been laid.

Stationyard.—Both the banks of the klong above referred to have been provided with double tracks. Besides a crane of 10 tons capacity and a landing for ordinary boats have been erected. The station-building together with office and quarters for the station-master and a shelter for customers has been constructed of Mai Teng Rang wood and covered with corrugated iron.

Extraordinary works.—At km. 3.7 the line is crossing the Paknam Railway. This necessitated preventive measures against collisions by establishing signal installation which was specially designed for this purpose. Besides the Paknam Railway had to be raised over 1 m. at this spot.

Total cost.—The total cost of the construction of the Riverline and Riverstation amounts to 614150 Tcs.

Prospects.—Though the traffic on the new station for the present is only slight it can hardly be doubted that in the course of time the station will play an important role in transhipment of goods between Railway and sea going vessels For this reason the station-ground has been laid out to meet all future eventualities. This seemed the more advisable as the steady increase of landprices along the river would have made it at later times difficult if not prohibitive to extend the station.

The place has been chosen on the deep water side of the river to facilitate later on the construction of wharves for seavessels. On the other hand the strong current of the Menam on this side affects heavily the bank, which is being gradually washed away and costly protections of the bank have therefore to be faced in future.

Mr. Ker believes that in spite of all obstacles the program of railway building in China will be carried out.

East Coast Railway Opened.—The new section from Bahru Bahau to Triang River, covering a distance of 32 miles, was announced ready for opening the first of the month. This branch taps Pahang at Triang. It is expected that this line will reach Semantan by the Spring of next year.

South Manchuria Railway.—This company has completed arrangements to increase its service to four trains weekly to and from Dairen to Changchun. It is also announced that the South Manchuria and the Kirin-Changchun line have arranged a working agreement at Kuanchangtze.

Supply of Indian Railway Material.—According to *Railways*, Messrs. J. Brown and Company, Limited, Sheffield, have supplied a quantity of helical laminated and volute springs for rolling-stock to the Assam-Bengal Railway, and the Patent Foundry and Axlebox Company, Limited, axleboxes. Messrs. Brown Bayley's Steel Works, Limited, Sheffield, had an order from this Railway for the supply of steel tyres for wagon stock; and the Isca Foundry and Engineering Company, Limited, Newport, Monmouthshire, a large contract for the supply of points and crossings. Messrs. Taylor Brothers and Company, Limited, Sheffield, were manufacturing 20 steel axles and 10 steel tyres for locomotive engines for the East Indian Railway and Messrs. Cammell, Laird and Company, Limited, Victoria Street, London, Proprietors of the Cyclops Steel and Ironworks at Sheffield, have a large order in hand for the supply of helical and volute springs for rolling-stock. The Patent Axlebox and Foundry Company, Limited, have an order for the supply of 300 axleboxes to this Railway. The roofing materials ordered from England for the circular engine shed at the Madura junction station, South Indian Railway, is under supply by Messrs. Braithwaite and Kirk, Limited, Structural Engineers. A pillar water crane is under supply by Messrs. Blakeborough and Son, Limited, and a turntable for locomotive engines by the Horschay Company, Limited, for the same Railway. Messrs. J. Stone and Company, Limited, London, are supplying 26 of their dynamos and 26 switches for the electric lighting of passenger trains on the South India Railway together with 875 "Tonum" cells accumulators. The Wardle Engineering Company, Limited, also had an order from this railway for the supply of electric light materials; and Messrs. Seimens Brothers and Company's Dynamo Works, Ltd., Stafford and Woolwich, for electric lighting cables. The Vulcan Iron Works, Limited, Engineers, etc., Calcutta have the order of the East Indian Railway Company for the supply of the necessary steel and woodwork required for 14 spans of footpaths, each 65 feet 5 inches long, together with brackets, runners, plank, handrailings, etc. for the 60 feet span girder bridges which are under construction on the Hooghly Katwa Branch across the Saraswati, Kunti and Kharri rivers. Messrs. Burn and Company, Limited, Howrah have the order of the East Indian Railway for the supply of the galvanized iron and steel work required for the roofing over the first floor of the new Junior Hill School ("Oak Grove at Mussoorie; also for a portion of the ground floor, including trusses, purlins, gutters, wind ties. wire netting, etc. Messrs. Heatly and Greshham, Limited, had the order of the East Indian Railway for the supply of a steam self-propelling Crane with double chain, to lift 5 tons at a maximum radius of not less than 15 feet, which was urgently required by their Engineering Department. The Leeds Forge Company, Limited, England, are manufacturing and will shortly ship 75 broad-gauge steel wagons for the transport of Coal for the Bengal-Nagpur Railway. Messrs. Stable Ford and Company, Limited, are supplying ten goods brakevans for the same Railway 2 feet 6 inch gauge extensions and the Gloucester Railway Carriage and Wagon Company, Limited, 14 broad-gauge railway wagons. The Consolidated Brake and Engineering Company, Limited, London, E. C., have supplied 200 sets of vacuum brake gear for rolling stock to the Burma Railways. Messrs. Willford and Company, Limited, have an order from the same railway for the supply of 500 helical springs for rolling-stock. Messrs. The British Insulated and Helsby Cables, Limited, Prescot, Lancashire, had a large contract for the supply of telegraph materials to this line. The Vulcan Foundry Company, Limited, locomotive manufacturers, have a large order in hand for the supply of "spares" or duplicate parts for locomotive engines to the East Indian Railway. Messrs. Taylor Brothers and Company, Limited, Sheffield, are supplying 60 steel tyres and 16 steel crank axles for locomotive engines to this Railway and Messrs. Owen and Dyson, Limited, 60 pairs of wheels and axles for vehicle stock and 200 spare wheel centres. Messrs. Greenwood and Battley, Leeds, are supplying the Loco and Carriage and Wagon Department of the South India Railway with a bolt and rivet forging machine. The Horsley Company, Limited, Tipton, Staffordshire, have the order of the East Indian Railway for the supply of 9 spans of steel girders for the Kiul bridge and 4 spans for the Hulluhur bridge, which are being renewed. Messrs. Gillanders, Arbuthnot and Company have an order for the supply of 2,000 tons of best selected Burma teak squares, first quality, to the North-Western State Railway. The Tees Side Bridge and Engineering Works, Limited, have the order of the East Indian Railway for the supply of the girders required for the second track over Tonse Bridge near Meja Road Station.

Singapore Government Railway.—The following excerpts are taken from the report of the Acting Manager and Chief Engineer, Mr. W. J. Haskins:

The result of the year's working shows an increase in the gross revenue of $38,845.64, compared with the year 1908. There has been a steady increase in passenger traffic, 463,804 passengers being carried during the year, which is 26,382 more than during the year 1908.

2. The receipts on account of goods nearly doubled during the year.

3. The capital cost of the Railway up to 31st December, 1909, amounted to $4,565,-967.57. The net earnings for the year were $68,144.14 equal to a dividend of 1.49 per cent.

4. The total revenue amounted to $233,-792 34.

5. The working expenses during the year amounted to $165,648.20, as compared with $174,512.26 during 1908.

6. In July, 1909, through traffic with the Johore State and Federated Malay States Railways was commenced and the total amount earned on this account by this Railway up to 31st December, 1909, was $6,573.33.

7. *Waggon Ferry Johore Straits.*—This was opened to traffic on 24th December, 1909.

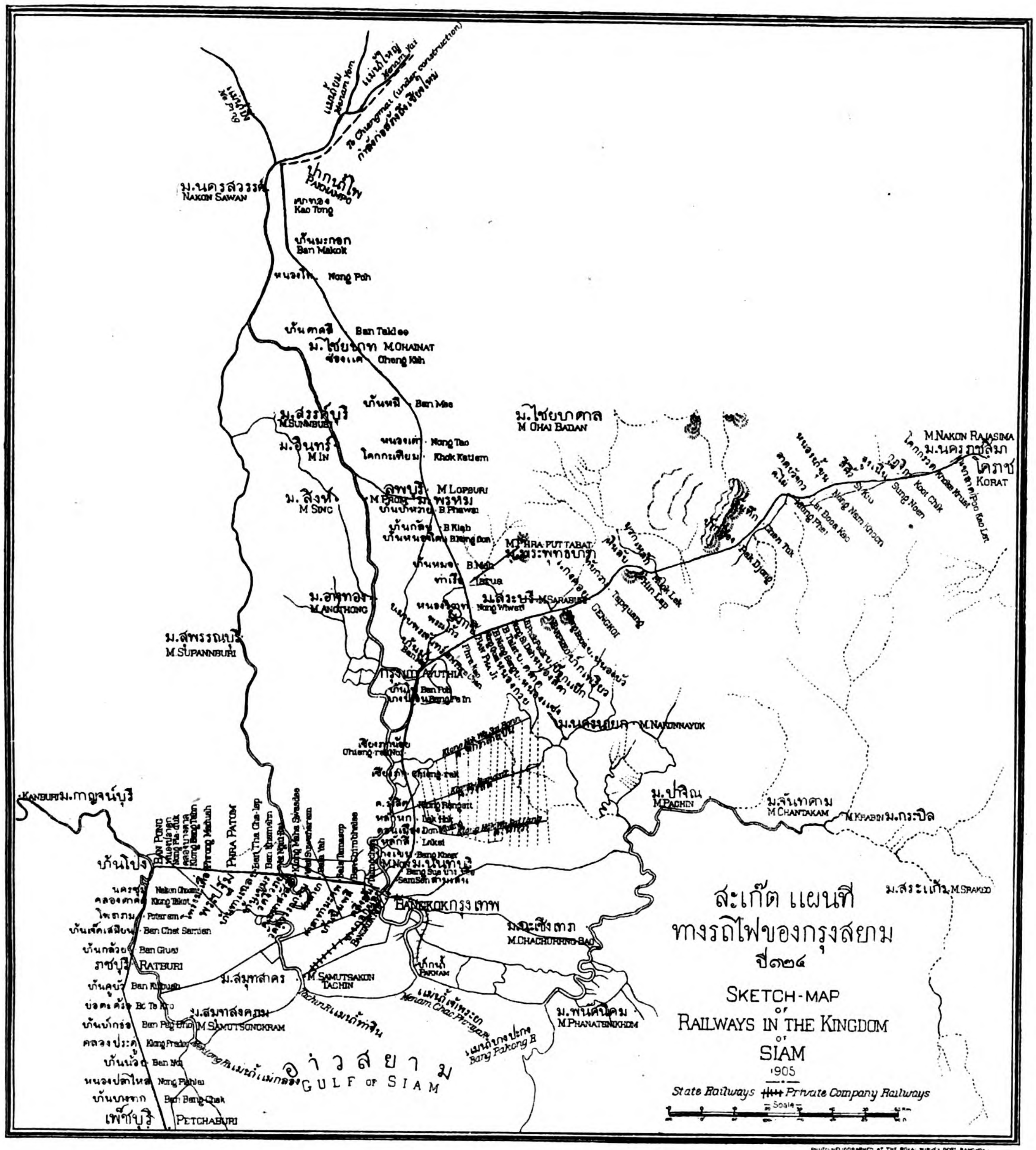
8. *Relaying.*—Six and three-quarter miles of permanent way were relaid with 80-lb. rails. Several low embankments were raised, nine level crossings and six girder bridges were also relaid.

9. The alignment between the 13th and 14th mile was corrected by straightening the road and so eliminating a short curve.

10. *Engine and Carriage Sheds.*—All the necessary brick work on the engine shed was completed, and the stell roof principals supplied by the Crown Agents were erected. Fuel stage and water column were also erected and foundations for the carriage shed completed.

French Indo-Chine Railways.—The following is gathered from the report of the Minister for the Colonies:

The whole of the line from Laokai to Yunnansen, a distance of nearly 300 miles, was opened to traffic quite recently. The Haiphong line, of which it is an extension, showed last year an increase of about £30,000 in receipts, as compared with the returns of the year before. In the case of the line from Saigon to Khanh Hon and Lang Bian, the section from kilometre 132 Phanrang will be opened on July 1, 1911, and the section from Phanrang to Nhatrang at the end of that year. The section from Phanrang to Xomgon will also be completed at the end of next year. The earning of this system, which will ultimately comprise about 250 miles of railways, showed an increase of nearly £3,000 last year. The returns from Hanoi, Ninh Binh and Vanh coastal line showed a decrease of nearly



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RAILWAY MAP OF SIAM

NEW GOVERNMENT HEAD OFFICE (FRONT VIEW) PETRIEU, ROYAL STATE RAILWAYS

PHILIPPINE MINING NEWS

THE PARACALE CONSOLIDATED MINING CO.—The owners of approximately fifty placer and lode claims in the Mambulao and Paracale Districts have consolidated their interests and incorporated with a captial of ₱1,000,000 divided into 500,000 shares of ₱2 each. The owners receive 300,000 shares of the stock and have donated 100,000 shares from their holdings for promotion work. Of these 25,000 have been placed on the market at ₱.50 and have been largely subscribed.

Little is known of the lode properties as the work of development is only in the initial stages. Encouraging reports have been received from the placers, but the company is very conservative in its announcement.

Indeed, the main purpose of the consolidation is to make a thorough test of all the properties before proceeding to active development. The initial subscription of promotion stock at ₱.50 was most satisfactory and testing operations are already under way.

PERSONAL.—George I. Adams, formerly of the Philippine Mining Bureau, returned to Manila recently after concluding an examination of the Timor Oil Exploration Company.

General Manager Bridgeman, of the Philippine Exploration Company, is expected to return to the Philippines from New York by the end of the month.

Ex-Governor Whitmarsh of Baguio, one of the pioneer mining men of Benguet, sailed this month accompanied by his family to Europe.

Mr. M. A. Clarke, president of the Benguet Consolidated, also sailed this month for Europe.

THE MAJOR GROOP.—Development work on this property, situated in Benguet, preparatory to the installation of a three-stamp mill has been progressing rapidly.

THE BENGUET CONSOLIDATED.—This company has been sadly crippled as a result of the serious storm in the mountain region which carried off its well equipped cyanide plant. The mill has been engaged in cleaning up the dump and the results have averaged from 80 to 100 ounces monthly. We have been informed, however, that arrangements have been made for the installation of a new cyanide plant to be completed in about six months.

THE PHILIPPINE EXPLORATION CO.—The San Mauricio mine began operating twenty stamps, September 7, and ran irregularly up to the end of the month, making 18 days full time. The result was 130 ounces of gold from the plates. Besides this, twenty tons of concentrates running in value from $50 to $80, U. S. C., per ton were shipped to the Tacoma Smelting Company. The mill has been running steadily during the month and it is expected that the output will average about 200 ounces with from 75 to 100 tons of concentrates monthly. Another shipment of 75 tons of concentrates will be made on November 12.

The Exploration Company has a prospecting party engaged in active operations on the Robinson group.

GOVERNMENT CEMENT FACTORY.—The Washington correspondent of the Manila *Cablenews-American* states that the War Department is considering the installation of a large cement manufacturing plant in the Philippines. The Government imported 84,000 barrels of cement last year and it is believed that the investment would be warranted by a general saving in cost.

THE EAST BATAN COAL COMPANY.—This company has added two coal cutters to its equipment. They were installed early this month and will increase the output by 300 tons daily, each having a capacity of 150 tons of coal every 24 hours. They were secured from Messrs. Ingersoll Rand & Co. of New York City. Two additional machines are on the way.

HEADQUARTERS MINING CO.—This company expects to be in a position by March, 1911, to begin operations with its battery of ten stamps. The machinery and equipment, including a Ridgeway filter tube mill, etc., are now being installed. The development work is still progressing and by the date of the beginning of mill operation, sufficient ore will be in sight to keep the plant supplied continuously.

THE NUEVA ECIJA FIELD.—Active interest is reported in this region. The Cabu and the Rio Chica companies are busily engaged in prospecting and reports continue very favorable.

THE MANCAYAN COPPER.—The status of this property remains unchanged, but negotiations are being carried on with interested parties looking to further development.

THE BUA MINING CO.—The Secretary Treasurer's report for the six months ended June 30, 1910, shows a profit of $13,512.15 after writing off ₱5,000 to a fund against overdraft. The mill did not resume operations after the storm of October, 1909, until January and owing to floods was closed down May. The result was 1,600 tons crushed, 1,237.04 ounces recovered by amalgamation, valued at ₱35,609.33; 578.41 ounces cyanide recovery valued at ₱10,566.80 making a total value of ₱46,176.13.

"*Condition of Plant.* All the milling machinery is in good working condition, the fluming however needs renewing. The cyanide plant and all its connections, with the exception of the sumps and zinc boxes destroyed in the typhoon, is in the best possible state of preservation. The gravity and aerial tramlines are in good condition and can be used in the construction of the new mill. When the mill was finally shut down, the cyanide plant and all machinery below the battery floor was dismantled and put high above any possible flood levels. Sheds were erected over the cyanide plant timbers to protect them from the weather.

"*Milling.* Operations were started on the 1st January, 1910, and continued till the 2nd May last when the heavy rains made it impossible to continue crushing profitably any longer. It was then considered advisable to shut down the mill pending the decision of the Directors as to the advisability of removing all machinery to a suitable mill site."

Mr. P. Weedon, the Company's acting Manager, reports in part as follows:

"*Mining.* On the 1st January work was resumed at the Gomok claim. No drifting on reefs has been carried on at the top levels as all work has been confined to stoping the North and South reefs on these levels. The average height stoped on the North reef is 45 feet. The average heights stoped on the South reef is 35 feet; and distance on each reef is 350 feet. The crosscut tunnel has been extended due South for a distance of 717 feet. This is the crosscut mentioned in the last report, the object of which was to cut the North and South reefs at a depth of 100 feet below the present working. At 515 feet from the mouth of the crosscut the North reef was cut, showing a body of ore 2½ feet wide and panning about $8 free gold per ton. The reef at this point is considerably larger and carries better values than at the same vertical point above. This is a splendid indication that the reef is stronger and better as it dips into the more settled country. From the point where the crosscut met the North reef, a drive was put in on the ore in an easterly direction for a distance of 80 feet, and then the lower crosscut was connected by an upraise with the top workings. This upraise follows the ore body all the way and shows the height of ore between the two levels to be 110 feet. The crosscut tunnel is well timbered where necessary, but ground through which the upraise passes was considered sufficiently hard to stand without timber. This was the condition of the mine after the typhoon in May 1910, and all men were discharged. Since the completion of the upraise no work has been done in the mine."

£10,000, owing to the floods. Work on the projected line from Mytho to Kantho has not yet been begun.

THE MINDANAO MILITARY RAILWAY.—With the appointment of General Wood to the post of Chief of Staff, interest in the Overton-Keithly line which has been mooted for years is revived, and there are prospects of an appropriation being secured next session of congress. General Wood while governor of the Moro province was strongly in favor of the enterprise and now that he is in a position to secure a better hearing it is expected that the matter will receive more attention. The survey of the line covering a distance of 24 miles was made some years ago and will cost approximately $400,000. Besides serving to carry military stores and supplies economically this line would open up a large tract of fertile country.

TAOTAI JEME TIEN YU'S APPOINTMENT.—The most important news of the month is the acceptance by Taotai Jeme Tien Yu, the successful railway engineer who was responsible for the completion of the Peking-Kalgan line, of the position of Director General of the Canton-Hankow line. He will not proceed to this post until he has completed the plans for the construction of the proposed Szechuan-Tibet line. It appears that Taotai Jeme accepted the position only after he had been guaranteed that all the shares of the companies interested were paid up and the proceeds deposited in responsible banks; that he would have a free hand to direct the work and employ assistants and labor, and that he would not be subjected to any criticism until he had completed the line. It is understood that these terms were complied with. It is believed that this appointment solves all problems connected with this line. In some quarters it is intimated that his appointment will do away with the necessity of floating the proposed foreign loan.

THE CHEKIANG RAILWAY TROUBLE.—The dismissal of Director General Tang Shan-chien has served to create an unusual situation in which there is serious friction between the merchants and the Board of Communications. From reports, it is the purpose of the Board to take over control of the railway. The latter part of September a meeting of the shareholders was held at which it was decided:

(1) That Mr. Liu Cheng-lo be invited to be Director-General of the Chekiang Railway vice Mr. Tang Shau-chien.

(2) That the shareholders be pressed to pay up the calls on their shares.

(3) That the authorities be asked to announce whether or not they have abolished the people's right to elect directors of the companies under their management.

All efforts to secure the reinstatement of President Tang proved abortive and the general sentiment expressed by the shareholders denounced the Government for interfering in the management of the line. However, the Peking authorities have been firm. It is reported that the Provincial Assembly suspended its session for the reason that the governor refused to have the subject of again addressing the throne reopened.

JAPANESE RAILWAY CHIEF HONORED.—The Czar has conferred the Order of St. Anne upon Vice-President Hirai of the Japanese Railway Board.

THE CENTRAL RAILWAY LOAN.—Conflicting reports are received as to the progress made towards the consummation of this agreement, but it would appear that the conclusion of the agreement is as far away as ever. A dispatch from Peking, October 4th, was to the effect that the representatives of the four foreign Syndicates and the Yuch'uanpu have held a conference in regard to the Canton-Hankow Railway Loan. H. E. Sheng Kungpao, Vice-President of the Ministry of Posts and Communications, criticized the terms offered and would not agree to take up the loan, urging the promise to the gentry not to employ foreign capital.

Previously a Peking dispatch stated that the Acting President had advised the foreign representatives that the matter would not be taken up until President Tang Shou-yi's return. So far no new information is available.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC RAILWAYS, LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIPS, AUTOMOBILES, ETC.

JAPAN PURCHASES WRIGHT AEROPLANES.—An agreement has been entered into between the Japanese Government and the German manufacturers of the Wright Machine for the purchase of aeroplanes for the Japanese Army and a commission of 36 Japanese officers are to be instructed in the art of flying by the German military aviator, Commander Engelbardt.

TRAMWAY TO JAPANESE HEALTH RESORT.—The Hanshin Electric Railway Company has revived the proposal to build a tramway to connect Kobe with Rokkosan, a distance of twelve miles. It is understood that a cable car service with electric power will be installed if present plans mature. The cost of installation is estimated at yen 5,000,000.

TELEPHONES IN MANCHURIA.—The *Manchuria Daily News*, reviewing the telephone exchanges in Manchuria, places the number of telephones operated by the Kwangtung government at 3,166 and which includes service in the cities of Dairen, Port Arthur, Liushutun, Chinchow, Tashihchiao, Liaoyang, Mukden, Tiehling, Kungchuling, Changchun, Antung, Hsinmintun and Fushun. Of these Dairen heads the list with 1,040. Besides the above there are 300 phones operated by the Yingkow Hydro-Electricity Co. and 300 more by the South Manchuria Railway Company, besides those operated by the Penchihu Colliery.

KUALA LUMPUR ELECTRIC LIGHT.—With the expenditure of $50,000 last year the capital investment in plant amounted to appoximately $1,000,000 from which a net revenue of only $20,000 was derived or about 1.8% on capital.

THE SIAM ELECTRICITY COMPANY, LTD.—The net earnings for the half year amounted to Ticals 304,503, an increase of Ticals 100,000 over the corresponding term, 1909. During the year there was a marked reduction in expenditure due to modern improvements added to the equipment. A dividend of 6% was paid for the term absorbing Ticals 196,250 and the balance was carried forward.

THE HILLS RAILWAY.—Plans and estimates for the construction of this line have been prepared for the construction of a line up Penang Hill according to the Resident Councillor's report. The cost is placed at $214,000 and with the sanction of the Secretary of State for the Colonies active operations will begin. It will be a cable line operated by electricity provided by the municipal station. The construction of this line will secure transportation to the cool hills where the residents will build their homes

PENANG'S NEW MOTOR FIRE ENGINE.—The municipality recently tested out its new motor fire engine purchased from Messrs. Dennis Bros. It is capable of a speed of 35 miles an hour and is equipped with a centrifugal pump that can throw water to a height of 126 feet.

THE JAPANESE AIRSHIP.—The Yamada airship was tested out last month at Osaki. The machine was attached to a rope during the flights, but the ascent and descent were successfully accomplished.

AMERICAN ARMY DIRIGIBLES.—The American military authorities have decided to add the dirigible airship to the equipment of the Signal Corps. An aerial corps is proposed as an auxiliary to the Coast Artillery.

WIRELESS ON U. S. INTERISLAND TRANSPORTS.—As a result of the accident to the Warren in Southern Philippine waters, the federal authorities have decided to equip all the transports in this service with wireless.

MANILA AUTOMOBILE TRADE.—The official police registry of automobiles owned in Manila show 339 registered by livery stables and private owners and 17 by dealers as demonstrating cars. During the year there has been a large increase of American cars sold in the islands and prospect of greater activity next year. The different bureaus of the government are making purchases and their use has been found a measure of economy in the cost of transportation. An automobile association has been organized and one race meet held.

GAS PLANT FOR MANILA.—There are two bidders for a franchise to install a gas plant in Manila. One of the bidders represents German capital and has been in the field for some time. A site has been selected and approved. The other bidder is Mr. Henry M. Jones, a local capitalist and president of the American Hardware and Plumbing Company. The matter will be referred to the legislature.

BRITISH CONTRACT FOR GAS PLANT.—The Tokyo Gas Company has placed a contract with a Bedford firm for the installation of a plant to cost £150,000.

THE SIAMESE TRAMWAY COMPANY, LTD.—The gross receipts for the half year amounted to Ticals 208,410.08 and the expenditure including track rent interest, etc., amounted to Ticals 168,065.72 leaving a net profit of Ticals 40,344. Of this Ticals 25,000 were written off for depreciation and the balance carried forward.

THE CHINGKIANG ELECTRIC LIGHT COMPANY—A private Chinese company with a capital of Tls. 300,000 was recently organized to install and operate an electric light plant in this city. Messrs. Arnhold, Karberg & Company who had the contract for the installation turned it over complete to the company last month. Commenting on this work, which was under the direction of Mr. Nettle, electrical engineer representing the firm, the correspondent of the *North China Daily News* says that it is one of the most complete and up-to-date plants to be found in the Yangtze valley and will remain for many years a splendid advertisement of the firm of Messrs. Arnhold, Karberg & Co.

THE FRENCH TRAMWAYS OF SHANGHAI.—The profit for the year amounted to £3,916 but no dividend was declared.

PHILIPPINE CABLES.—Iloilo is to be made the central relay station for the southern islands to be connected by a cable from Calibo in Capiz to Romblon and another to connect Camp Jossman with Pulpandan in Negros. These connections will place Iloilo in direct communication with Manila in the north and Malabang in the south.

TOKYO ELEVATED RAILWAY.—The prospect for the construction of the proposed system in Tokyo at an early date is not very bright. There is great opposition to the project by the people and even the promoters agree that it will be years before the plans may be carried out successfully. The proposed lines would run at right angles to each other, one connecting Shinagawa and Asakusa, along the sea coast, and the other connecting Shinjuku and Monjo. The ward assemblies declare against the project for the reason that it would injure the view, obstruct the sunlight, create an unendurable dni and expose the householders to loss of privacy and great danger, according to the *Japan Times*.

DAMAGE TO JAPANESE ELECTRIC WORKS BY FLOODS.—The Tokyo Electric Light Company was affected by a reduction of its working capacity by a reduction from 13,000 kilowatts to 9,000 daily owing to obstructions in the water supply of the power stations. The Takasaki Water Power Generating Company had its power station, water reservoir, condensing plan badly damaged while parts were washed away. The waterway was practically buried in earth and sand carried into it by the force of the flood. The Seimo Electric Company had its supply and power station utterly destroyed but will soon resume operation. The *Japan Times* directs attention to the values of the experience during the recent floods to new companies engaging in like enterprises and the necessity of constructing more substantial reservoirs.

ELECTRICAL ENTERPRISE IN KWANSAI.—The following companies have been organized since the first of the year, according to an Osaka report:

The Hankai Electric Railway Co. (capital, 3,000,000 yen); the Hiroshima Electric Railway Co. (capital 3,000,000 yen); the Nara Electric Railway Co. (capital 3,000,000 yen); Okinawa Sugar Manufacturing Co. (capital, 2,000,000 yen); the Kita Osaka Electric Railway Co. (capital, 2,000,000 yen); the Kyoto New Electric Light Co. (capital, 2,000,000 yen); the Raisei Electric Railway Co. (capital, 1,000,000 yen); and the Nara Gas Co. (capital, 500,000 yen); their total capital aggregating to16,500,000 yen.

F. M. S. MOTOR SERVICE.—The F. M. S. Railways have suspended their motor service between Seremban and Kuala Pilah, an arrangement having been entered into with a Chinese contractor to provide the connections.

MANILA AIRSHIP.—A monoplane designed by Eugene Girard of the Mitchell-Brush Automobile Garage is now almost perfected and will be given a trial this month.

The machine is a combination of the Bleriot and Demoiselle of Santos Dumont. Its engines are 36 horse power, with four cylinders. The propeller is made of native wood and measures 2.10 meters in full length; and will make 1,400 revolutions a minute. The tail consists of three different parts and are all kept moving continuously when the machine is in action.

The body and tail of the machine are made of guijo, very flexible and resistant and the total length of the apparatus is a trifle more than ten meters. Its weight when complete with one average man will be 375 kilos.

The wings of the machine are over four meters long, are made of a double cover of canvass and sustained by piano steel wires made tight by the use of aluminum turned buckles.

PUBLIC WORKS, DOCKS, WHARVES, BUILDINGS, ETC.

THE PANAMA FORTIFICATIONS.—The estimates submitted for the completion of the defenses for the canal before 1915, involve an outlay of $14,000,000. Of this it has been recommended that $4,000,000 be made immediately available. The items included in the above estimate follow:

Purchase and reclamation of sites	$1,125,000
Emplacements	6,027,000
Guns and carriages	2,324,000
Ammunition	1,328,288
Power plans	138,000
Searchlights	244,800
Fire control	370,755
Submarine mine defenses	658,360
Barracks and quarters	1,834,000
Total	114,104,202

THE LUNETA EXTENSION PLANS COMPLETED.—The Municipal Board of Manila has approved plans for the improvement of the new made ground reclaimed by the city on which the Army and Navy and the Elks Clubs and the New Hotel are being built. The plans include parking, etc.

FINAL PAYMENT ON WATER SUPPLY CONTRACT.—The Manila Municipal Board has authorized the payment of ₱80,445 in full to Messrs. Matson, Lord and Belser Company for work done by the company on construction of the dam.

SINGAPORE SEWAGE SYSTEM.—A system of sewage for the city of Singapore has been recommended by Mr. Taylor for adoption by the Municipality, which will involve an outlay of £538,000 and an annual expenditure for maintenance of £10,000. The plans are most complete and would provide ample facilities for carrying off all the sewage of the city and place it in a satisfactory sanitary condition. The following are the items of cost as submitted:

Main outfall sewer	£ 85,000
Branch sewers as shown on plan	70,000
Further branch sewers that may be found necessary	20,000
Syphons under Kalang and Singapore rivers	7,000
Ventilation	5,000
Flushing tanks	2,000
Intercepting pits	6,000
No. 6 night soil depots	24,000
Engine house, foundations, boiler economisers, engines, pumps, and screening and dredging plant	40,000
Pumping mains	87,000
Outfall works	128,000
Effluent outfall to sea, including piling	15,000
	489,000
Contingencies, 10 per cent, say	49,000
	£ 538,000

BUILDINGS IN CANTON.—Vice-Consul General Myers makes the following report on construction work in this city:

"On Shameen, during 1909, a municipal bath house was constructed at a cost of approximately $8,160. A "go-down" and junior staff quarters for the Hongkong Shanghai Banking Corporation, and a building for the Chartered Bank of India, China, and Australia are under construction. The examination shed and quarters for the outdoor staff of the Imperial Maritime Customs, situated opposite Shameen, at Honam, was completed last year. The bund from Tai-sha-tau to Shameen was also pushed forward and practically finished. Many new buildings, semiforeign, were erected along the bund during this time. At Tai-sha-tau the imposing railway terminus for the Canton-Kowloon Railway was completed. At Tungshan residences and railway buildings for the use of the staff, and also several schools and residences for American missionaries have been constructed. During the year the new dormitory building of the Canton Christian College was completed at a cost of about $14,300.

"About one-half mile outside the east gate is the legislative building of the provincial assembly. This building was so far completed as to permit of the assembly sitting during the latter part of its session in November."

MANILA'S NEW WATER MAINS.—The Atlantic Gulf and Pacific Company made a record in the laying of water mains, completing the contract eighteen months previous to the time required in their contract. In all there were twenty-two miles of pipe laid varying from four to forty-five inches in diameter.

F. M. S. PUBLIC WORKS.—The total expenditure under this head for the year 1909 amounted to $6,750,000, about $2,000,000 less than the estimates. During the year 83 miles of metaled roads were added throughout the states and 75 miles of bridle paths. The total mileage of road at the present time aggregate 1,874 of metaled roads and 1,477 miles of bridle paths. The Krian irrigation scheme involved an expenditure of $30,000.

YOKKAICHI HARBOR IMPROVEMENTS.—An appropriation of yen 2,500,000 has been made to develop this important harbor. A retaining wall 400 feet in length is to be built and the basin deepened from 22 to 28 feet. A channel about 120 yards wide and 28 feet deep is also contemplated.

NEWCASTLE'S PORT IMPROVEMENTS.—The following is the report of Consul Killmaster:

"Good progress is being made generally in the improvement of the port. During 1909, 4,750 tons of bowlders were removed by dredges at the entrance, and it is thought that in the course of a few months the navigation department, which is now sounding the actual depth available in the channel, will find a passage of navigable width to carry no less than 23 feet of water at low-water spring tide. The clearing away of these bowlders is no doubt of immense importance and opens up possibilities of obtaining a deep port with small expenditure, compared with what would have been required had solid rock existed, as was first thought. On the inner crossing a depth of 32 feet has been tested without finding solid rock, and on the other crossing a depth of 26 feet.

"During the past year the expediency of extending the northern breakwater to the harbor entrance was considered by the Government, and after public inquiry the committee on public works reported in favor of extending both northern and southern breakwaters a distance of 420 feet, at a cost of $450,000. However, parliamentary effect could be given to only that part of the committee's recommendation as to the northern breakwater, and an enabling act to carry out this work at a cost of $175,000 was passed in December, 1909. Work has been commenced, and so far 3,500 tons of stones have been deposited. With the completion of this extension it is anticipated that a channel depth of 25 feet at low-water spring tide will easily be maintained."

TOKYO BAY CANAL.—The *Tokyo Asahi* reports that a plan is on the tapis to launch a large company with a capital of 15,000,000 yen with the purpose to construct a canal across Tokyo Bay, says the *Japan Times*. According to its plan, the canal is to be constructed between Haneda and Shibaura. It is to be 200 ken broad and 30 ft. deep, so that big vessels of 10,000 tons or more can directly proceed to Tokyo from the Pacific and anchor close to the metropolis. Besides the construction of the canal the new company will reclaim an area of about 6,000,000 tsubo along the canal, with the sand got by the excavations at Haneda point and by the dredging off Omori and Shinagawa. On a part of the reclaimed ground a railway line will be laid and many godowns constructed, while the remaining part will be let or sold. Fixing the business term of the company for ninety-nine years the company will collect tonnage dues at the rate of 10 sen per ton from vessels passing through the canal and on the expiry of the term the canal will be handed over to the Government. As soon as quarter, viz., 3,750,000 yen, of the entire capital is paid up the company will start work, resorting to loans or the issue of debentures for construction funds.

HARBOR AT SOURABAYA.—The improvements to this harbor will cost approximately florins 14,000,000 and will be completed in five years.

NEW BRIDGE OVER THE PASIG.—The plans for the new railway bridge over the lower Pasig in Manila are well under way. It will cost about ₱1,250,000 which will be borne by the Manila Electric Railway, the City of Manila and the Manila Railway Company. This bridge is to serve as the connecting link between the new port and the business section and the railways will occupy it with their track extensions.

PUBLIC AQUARIUM FOR MANILA.—The Insular Architect is preparing plans for the construction of an aquarium containing 24 plate glass tanks and some large tanks to be located at the gates to the Old City Walls. A collection of large fish, sharks and crocodiles are to be included in the collection.

STRAITS SETTLEMENTS PUBLIC WORKS.—Special reference was made in the report for 1909 to the development of the work on the new docks and wharves at Singapore and Penang.

The progress of the lagoon dock and main wharf reconstruction, Tanjong Pagar, by Messrs. John Aird and Co., has not been all that had been anticipated with such experienced contractors. In the lagoon dock some difficulty has been met with in sinking the foundations for the end walls of the dock, due to the nature of the strata met with in the trenches, but negotiations are proceeding between the engineers and the contractors with a view to coping with the difficulty in question. The chairman of the Tanjong Pagar Dock Board is now in London in connection with these negotiations. I regret that I am not yet in a position to give full information on the subject but hope to be able to do so shortly. The first completed length of 500 feet of the concrete block work wall of the main wharf reconstruction was handed over to the board on March 5, and operations on the next 700 feet of cylinder construction wharf have been pushed forward satisfactorily. The daily average number of men employed on the works has until latterly, been 3,000, and the value of work executed to date is £340,000. It is satisfactory to note that progress on the new graving dock, Keppel harbour, a most important addition to the facilities of the Port, has proceeded uninterruptedly, and that the works are in full swing both by day and night, with every prospect of their due completion well within the contract time. The daily average number of men employed on these works is 1,000 and the value of work executed to date is about £76,000. The Telok Ayer reclamation is proceeding satisfactorily. The extensions to Swettenham pier, Penang, have progressed rapidly. The northern extension of 345 feet is completed and the southern extension of 255 feet will be half completed by the end of the year. When these extensions are finished the pier will be 1,200 feet long with water frontage 30 feet deep at low tide.

HARBOR OF HAKODATE.—Hakodate's harbour facilities will be greatly increased when the scheme forming part of the "15 Years Programme" shall have been carried out. A breakwater will be extended to 3,300 shaku, which will expand the inner harbour to 3,600,000 yards. This is chiefly against the North-west wind. Another project is two embankments, to keep out the sand, to be erected on the other side of the harbour with a distance between them of some 17,000 shaku. These undertakings are begun this year and to be extended over 8 years. The total expense is 1,669,734 yen.

Again Hakodate boasts of a private dockyard—the Hakodate Dock Company—at the reclaimed ground at this city's west end. It covers over 25,800 tsubo, and has accommodation for ships of 10,000 tons.—*Japan Times*.

SHIPBUILDING, MERCHANT MARINE, FISHERIES, ETC.

NEW STEAMERS FOR THE MITSUI BUSSAN.—Five coal steamers have been ordered from a British shipyard and they are expected completed early next spring. Two of the new vessels will have a carrying capacity of 8,200 tons, dead weight; two, a capacity of 3,000 tons and one which may be converted into a general cargo steamer with a capacity of 5,000 tons. They are all to be of the cantiliver type, the water ballast being placed on either side of the deck with concave surface of the tanks facing the cargo.

The two large steamers which are to be known as the Kingasan and Tenpaisan Maru are to be fitted with 10 wenches, 12 derricks and five hatches 36ft. by 31ft. Their steaming capacity will be 10½ knots when fully loaded and 11½ knots in ballast The two smaller steamers are to be known as the Rokkosan Maru and Takaosan Maru and are to be fitted with 9 wenches and 8 derricks and are to have four hatches 28 by 18½ feet. These steamers will have a speed of 10½ knots when loaded and 10½ knots when steaming in ballast.

JAPANESE DREADNOUGHT LAUNCHED.—The Kawachi has been launched at Yokosuka. This battleship was laid down in January, 1909. Her tonnage will be 20,850 with a speed of 20.5 knots. Her dimensions are: length 480 feet; beam, 85 feet. She draws 28 feet. Curtiss turbines will be installed and she will have four screws. She will have six turrets, and two pole masts. Her armament will consist of a main battery of twelve 12-inch a secondary battery of ten 6-inch, and twelve 4.7 inch and five submerged torpedo tubes will be added.

JAPANESE FISH DEPOTS.—Consul Diechmann writes that the Japanese government is interested in the establishment of modern fish depots at Nagasaki and Shimonoseki for the benefit of the steam trawlers. A cold-storage plant would be an essential part of the scheme, and the fish could be sent to all points in the interior of Japan having rail connection, and would vastly increase the market for the fish.

The whaling industry is also one of increasing importance. The Toyo Hogei Kaisha is a combination of several whaling companies and owns 36 of the 40 vessels licensed by the Japanese Government to engage in whaling. The total number of whales caught by this company during 1909 was 605, which had an estimated value of $1,500 each. The port of Moji is the supply and shipping point for a laıge number of the whalers.

VESSEL FOR U. S. NAVY.—The s. s. Banaag was launched from the Kowloon Docks last month. This vessel was ordered by the American Government for service at Olongapo Naval Station. It is 160 feet in length with 16 foot beam and designed to develop a speed of nine knots. She is equipped with triple expansion engines of modern type. A large horizontal tube boiler is installed.

AUSTRALIAN STEAMSHIP SERVICE.—The *Daily Consular Reports* contain the following from Acting Consular Agent at Townsville:

"The Dutch line of steamers (Koninklijke Pakevaart Maatschappij) between Batavia and Australia is still maintained. The line now has three vessels running monthly, the principal imports being spices, gum, and kapok. Batavia is establishing another outlet for Australian live stock, and already several shipments of horses have gone forward.

"The subsidized monthly service from London via Torres Straits inaugurated by the Queensland government is proving a boon, and every advantage is being taken of the service by merchants. These vessels berth at the Jetty Wharf and land their cargo there. Under the vigorous immigration policy adopted by the Queensland government large numbers of immigrants come forward by these vessels monthly.

"Trade relations with the Philippines are principally maintained by three British lines and one Japanese, frozen meat and live stock being the principal exports. The China Navigation Company (Limited) has contracted for carrying regular monthly shipments of horses and ponies to Manila. It may, perhaps, be advantageous for an American shipping line to consider the advisability of inaugurating a service between Australia and the Philippines and the East generally to cater for this business, which is sure to increase."

THE CHINA MERCHANTS STEAM NAVIGATION CO.—The shareholders of this company have presented another petition to the Government asking that the sole management of the company left to the merchants intersted. They claim that Government control is expensive and inconvenient.

THREE JAPANESE SUBMARINES.—A Kure report is to the effect that the naval authorities are constructing three modern submarines at a special workshop in the Kure arsenal.

A NEW ZEALAND SUBSIDY.—The Government of New Zealand has decided to subsidize the N. A. mail line to San Francisco and to otherwise encourage shipping so as to secure her share of the Pacific trade.

T. Y. K. REDUCES RATES.—This company has reduced its passenger rates from Yokohama to Seattle to Yen 250 first class and yen 134 second class.

OIL BURNING DESTROYER FOR U. S NAVY. The trial tests of this new vessel show an average of 32.8 knots.

JAPANESE SUBSIDIZED STEAMERS.—The following is a list given by the *Japan Mail* of the steamers and lines now enjoying the benefit of the provisions of the Japanese Deep Sea Navigation Subsidy Law:

Lines.	Subsidy. yen.	Companies.
Antwerp (European) line	3,183,000	N. Y. K.
San Francisco line.......	2,051,000	T. K. K.
Seattle line.............	387,700	N. Y. K.
Tacoma line..	821,800	O. S. K.
South American line.....	405,600	T. K. K.
Australian line..........	425,700	N. Y. K.

On the European line are employed eleven steamers, namely, *Tango Maru, Hitachi Maru, Iyo Maru, Kaga Maru, Aki Maru, Kamo Maru, Mishima Maru, Atsuta Maru, Miyazaki Maru, Kitano Maru* and *Hirano Maru*, and the last named six steamers being all the newly built 8,600 tons steamers. On the San Francisco line are employed the *Chiyo Maru, Tenyo Maru* and *Nippon Maru*; on the Seattle line the *Awa Maru, Tamba Maru* and *Inaba Maru* and on the Tacoma line the *Tacoma Maru, Seattle Maru, Panama Maru* and *Chicago Maru*, all of them newly built, 6,000 ton steamers. On this line will be placed the two new steamers the *Mexico Maru* and *Canada Maru* from next year.

SHANGHAI SHIPBUILDING.—The tug Kathryn built to the order of the Kochien Towboat and Transportation Company made an average speed of 9.58 at her trials last month and was formally turned over to her owners. The dimensions of this vessel are:

Length, 70 feet; breadth, 14 feet; depth, 8 feet. Her engines are of the compound condensing type with cylinders 11 in. and 22 in. with 12 in. stroke. Marine type boilers, with return tubes 7 ft. 10 in. in diameter and 8 ft. in length working at 120 lbs. pressure to the square inch, are installed.

ZAFIRO AND RUBI CHANGE FLAGS NOVEMVER 7.—The transfer of the steamers Zafiro and Rubi of the China and Manila Steamship Co. to the Philippines coastwise service, which necessitated their transfer from the British to the American flag, has been arranged. With the transfer an American master and crew will take charge. It is understood that Captain Crosby of the Interisland Transport Service is to command the Rubi and Captain Rice, the Zafiro.

TOYO KISEN KAISHA EXPANSION.—In carrying out its contract with the Western Pacific, this company proposes adding two vessels, making five vessels covering this connection. The America Maru is to be refitted for the purpose and a new turbine driven steamer, a sister ship of the Chiyo and Tenyo, now under construction at the Mitsu Bishi Dockyards at Nagasaki, will be added when completed. The five steamers will be in operation on this line by January next year.

The *Mexican Herald* states that with the withdrawal of the Kosmos Line from the Pacific coast trade between Salina Cruz and South and Central American ports, Toyo Kisen Kaisha Line will be left alone in the trade. In view of this fact, that line will increase its capacity to five steamers of large tonnage beginning October 6. It is probable that the sixth vessel will be added to the service before the end o the year.

The Kiyo Maru, 17,000 tons, will arrive at Salina Cruz October 6, the first steamer on the new schedule. She will be followed at intervals of twenty five days by the Manshu Maru, 8,200 tons; Hong Kong Maru, 11,000 tons; America Maru, 11,000 tons, and Buyo Maru, 11,000 tons.

About four months will be occupied in the round trip over the route from Hongkong, China, to Kobe and Yokohama, Japan; Honolulu, Hawaii; Manzanillo, and Salina Cruz, Mexico; Callao, Peru; and Iquique and Valparaiso, Chile.

The new service will reduce the time between South American ports and London from four months to two months, and the time between Salina Cruz, Mexico, and Callao, Peru, will be cut down from thirty to eight days.

This new service will be inaugurated to handle the increased business which will result when the Komos Line abandons the port of Salina Cruz. It will handle the traffic from the Orient to Mexico and South America, which will result from the recent traffic agreement entered into by the Western Pacific Railway Company and the Toyo Kisen Kaisha Line. The cargo from San Francisco to Mexico and South America will be handled by way of Honolulu on the vessels of the Toyo Kisen Kaisha Line steamers which ply between San Francisco and the Orient. This cargo will be transferred at Honolulu to steamers in the southern trade

MINES, MINERALS, THE METAL TRADE, MACHINERY, ETC.

THE BRUSEH TIN MINING COMPANY.—The report for the year shows a profit of $5,710.38. No dividend was declared. This company is becoming interested in rubber.

BURMA OIL COMBINE.—The Burma Oil Company is to have a formidable rival in the form of a combination of the Rangoon Oil Co., Ltd., with an authorized capital of R2,000,000, and an issued capital of R1,194,760, last dividend 55 per cent., and latest quotation on its R10 shares, R55; the Rangoon Refinery Co., Ltd., with R1,500,000 capital fully issued, no dividend, but its R15 shares standing at R18; and the Aungban Oil Co., Ltd., with an authorized capital of R3,500,000, issued capital R2,550,000, no dividend, its R15 shares standing at R13½.

RAHMAN HYDRAULIC TIN COMPANY.—The report for the year shows that after writing off $16,213.40 for depreciation, shows a profit of $67,658.70. Interim dividends absorbed $31,869 leaving a balance of $35,797.70 which was dealt with as follows: Final dividend $15,930.50, bonus mine staff $1,300, general reserve $10,000, forward $8,567.20. A final dividend of 5% was declared making 15% for the year.

THE PAULO LAUT COAL MINING COMPANY.—The output of this company for the year 1909 amounted to 119,000 tons compared with 98,000 for 1908. Over 160 vessels bunkered at Stagon, the port of the company in British Dutch East Borneo during 1909.

MANUFACTURING PLANTS FOR JAPAN.—The Japanese press claims that the recent tariff is having the effect of inducing foreign manufacturers to establish themselves in Japan and point to the proposal of Messrs. Babcock & Wilcox to establish a boiler manufacturing plant It is understood that the Mitsu Bishi and Mitsui banks have been in communication with several large foreign manufacturers looking to the encouragement of this scheme.

THE COWIE HARBOR COAL COMPANY, LTD.—The *London and China Express* in reviewing the proceedings of the annual meeting stated that the chairman expressed the hope that

over 200 tons daily would be the output during this year and that the company had proved up 20,000,000 tons on their holdings.

THE PEKING SYNDICATE.—With the return of the force of colliers after the local harvests, the output of these mines is represented by 1,200 tons of coal daily. The output for July reached 23,000 tons and sales 17,500 tons.

KRUPPS MAY INVADE CHINA.—A London report is to the effect that in view of the large ordnance orders soon to be placed by the Chinese Government and the increased activity in this line of development in the Far East, the firm of Krupps is endeavoring to secure a site for the establishment of a plant in China.

THE EASTERN SMELTING COMPANY.—The report for the half year shows larger and more satisfactory returns than ever the previous corresponding term. A dividend of 4% was declared and $20,000 carried forward.

NEW DREDGER FOR THE TONGKAH COMPOUND TIN DREDGING COMPANY.—An order has been placed by this company in Australia for a tin dredger designed to work at a depth of the 35 feet below water level, the dimensions of the hull to be 120 feet in length, 40 foot beam and a depth of 7.5 feet. The price named is £18,000. The dredge will be utilized on the company's concession, Tongkah Harbor, Siam.

F. M. S. TIN EXPORT.—The Mines office has issued a statement of the exports for the first eight months of the year as follows:

The figures for Perak, Selangor and Negri Sembilan respectively are as follows:—

Tin. Pikuls.	Tin Ore. Pikuls.	Total. Pikuls.	Duty. $ c.
66,304.44	218.853.71	285,158.15	2,742,916.47
28,621.33	134,495.41	163,116.74	1,598,097.33
85.87	23,809.98	23,895.85	234,148.08

The figures for the corresponding period of 1909 were:—

Tin Pikuls.	Tin Ore. Pikuls.	Total. Pikuls.	Duty. $ c.
71,535.17	223,611.78	295,146.95	2,548,210.59
30,095.54	143,316.66	173,412.20	1,499,742.07
4,264.83	27,458.00	31,722.83	273,208.72

BELAT TIN MINING COMPANY, LTD.—At a recent meeting of this company a dividend of 20% was declared making 30% for the year.

GOLD AND TIN IN KELANTAN.—The report for 1909 states that the Duff Development Company worked four dredges in the Galas River and won 8,507 ounces during the year. Another dredge is now working on the Nenggiri River where the company has a concession covering seven miles of the river. The output tin for the year amounted in all to 69 piculs.

OIL WAR IN SINGAPORE.—A war in the price of oil was inaugurated between the Standard Oil and the Asiatic Petroleum Company upon the conclusion of their agreement a month ago. There has been a drop of 40% in the price and the latest advices from Singapore are to the effect that Standard Arrow brand was quoted at $1.00 Straits Cur. a case of eight gallons while the Asiatic Dragon was quoted at the same price. These brands were formerly quoted at $1.70 and 1.53 respectively.

NEW TIN MINING SYNDICATE.—The formation of a company to exploit tin lands near Batu is proposed as a result of the tests made by the Kepong Syndicate, Ltd., on over 30 acres of tin bearing land. The capital of the company is reported to be £150,000. The total area involved is 227 acres.

HANGYANG IRON WORKS SECURES LARGE RAIL CONTRACT.—The contract for the supply of 6,000 tons of steel rails to the Northern Section of the Tientsin-Pukow Railway has been secured by the Hangyang Iron Works. The price is reported to be Tls. 50 a ton.

NEW ALLOY DISCOVERED.—Messrs. Vickers, Sons and Maxim have placed a new alloy on the market known as Duralumin which is reported to be slightly heavier than aluminum and as strong as steel. The new metal may be rolled, stamped, extended or forged at suitable temperatures.

MINING IN INDO-CHINE.—A bulletin issued by the Governor General directs attention to the undeveloped mineral wealth of the country and urges greater activity in developing the coal measures of Hongay. The zinc mines of Trang-da, Lang-Hit and the Thang-Moi produced 40,000 tons of zinc last year and lead and copper deposits have been uncovered at Caobang.

F. M. S. TIN RETURNS FOR AUGUST.—The returns show a total output of 13,741 piculs.

THE RAUB AUSTRALIAN GOLD MINING CO., LTD.—For the four weeks ended August 13, 3,993 tons of ore were crushed and 802.23 oz. of gold recovered.

FINANCIAL, COMMERCIAL AND MISCELLANEOUS NEWS

THE NETHERLANDS INDIA BUDGET.—The total estimates for 1911 show a total revenue of florins 212,588,075 as against an expenditure of florins 230,738,102.

PRODUCTS OF JAVA.—The annual report of the Java Bank contains some interesting figures concerning the principal agricultural products of Java. The production of sugar, for instance, has been very favorable during 1909, as 180 factories produced 20,208,000 piculs (Javan picul = 136 pounds), which is about 140,000 piculs more than in 1908. This quantity changed hands at an average price of 6.60 florins (florin = 40¼ cents) for Muscovados. The Deli tobacco crop yielded 271,350 bales, being about 1,000 bales less than a year ago. The average price per half kilo (1⅛ pounds) was 1.10 florins, against 0.91 of a florin, and the total value of the crop has been fixed at 46,600,000 florins, or nearly 8,000,000 florins more. The crop of Java tobacco was disappointing, 506,013 bales being exported, or a decrease of 110,000 bales. The proceeds were only 25,740,000 florins, against 32,400,000 florins in 1908. The cultivation of tea is also constantly advancing, so that in 1909 20,176,376 kilos were exported from Java against 15,979,269 kilos in 1908. This culture will be still more largely extended, foreign capitalists also being interested. Of copra, 129,089 tons, at a value of 25,600,000 florins, have been shipped from Netherlands East India.

CHINA'S BUDGET.—The estimates prepared by the Ministry of Finance include a total expenditure of Tls. 333,502,300 while the revenue is estimated at Tls. 297,501,700, a deficit of Tls. 36,006,600.

CHINESE BONDS.—A Reuter dispatch from London is to the effect that Chinese bonds for the amount of £450,000 being 7% interest were issued in London on the 26th On Saturday last they were quoted at a premium of from £1 to £2; the present quotatation is £108. The amount is to be appropriated for the redemption of the Peking-Hankow railway bonds.

PHILIPPINE SUGAR.—The reports from Panay and Negros are to the effect that production for 1910-11 will reach 2,096,000 piculs, an increase over last year of about 48 per cent.

MANILA REVENUE.—During the first quarter of the fiscal year ended September 30th the total collections from all sources amounted to ₱442,050.35, an increase of ₱15,112 over the returns for the corresponding quarter last year.

GOLD YEN NOTES FOR MANCHURIA.—The *Manchuria Daily News* states that yen 1,000,000 of newly issued yen 5 gold notes were received last month by the Dairen Branch of the Yokohama Specie Bank in exchange for the old notes.

WILD COCOON SILK REELING STATION AT ANTUNG.—It is proposed by several Japanese capitalists to incorporate a company with a capital of yen 500,000 for the purpose of operating 100 reels at this point in view of the quantity of wild cocoons available in that region

SOME RUBBER DIVIDENDS.—The *Malay Mail*, commenting on enviable dividend-producing companies, says:

"The Tremelbye dividend announced today brings another F. M. S. rubber company into the list of dividend-paying concerns. This Company has an authorized capital of £75,000, and an issued capital of £52,552, consisting of 46,552 fully-paid £1 shares and 12,000 £1 shares issued last year and now ten shillings paid. The Company's estates, comprising 2,186 acres in all, are Tremelbye, Ebor, and Sungei Nebong. There are 1,545 acres planted, including 1,002 acres over 2½ years old, 249 acres over 3½ years old and 108 acres over 5½ years old. There are, approximately, 228,370 trees. The crop for the year ended June 30th was 22,118 lb., and, as the output for July and August alone is more than half this total, it is evident that this year's crop will very largely exceed last year's. The prospects of the Company appear very bright.

"The Cicely Company is one of the lowest capitalised concerns in the country—£16,000—and its dividend record makes a pretty picture. It has declared the following dividends to date:

	Pref.	Ord
1905-6	10	5
1906-7	20	15
1907-8	42½	37½
1908-9	55	50
1909-10	140	135
1910-11	51¼	50 (int.)
	318¾	292½

"It would appear from the amount of the interim dividend on the preference shares that the directors contemplate paying further dividends for the current financial year of 153¾ on the preference and 150 on the ordinary shares

SIBERIA COLONIZING SCHEME.—It is estimated that the Russian Government will expend Roubles 2,500,000 in encouraging emigration to Siberia this year. Over 13,000,000 acres are to be surveyed into 40 acre plots and each adult is entitled to acquire one plot. Besides money will be advanced to aid the colonists and it is estimated that over 500,000 persons will be transported to the new territory.

PHILIPPINE SUGAR BONDS PROPOSED.—Governor General Forbes has recommended that the legislature provide a fund for the purchase of bonds issued by sugar companies composed of hacienda owners, the capital to be utilized in installing sugar centrals in the Philippine sugar districts

HONGKONG-MANILA PARCEL POST.—The Hon C. B. Elliott, Secretary of Commerce and Police, and the Postmaster General of Hongkong recently concluded negotiations for the opening of a direct parcel post service between the two cities. The maximum size of parcels will be 3 feet 6 in. in length and the maximum weight 11 pounds, including all classes of merchandise. The rate will be 35 centavos per pound or fraction. An extra sum of ten centavos in Manila and 15 centavos in Hongkong will be charged for delivery to street address. Conventions of a similar nature are proposed with other colonies and the islands and direct money order exchange is being considered.

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, September 30, 1910.

STOCK.	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND.	Approximate Yield per cent per annum at Present Quotation	CLOSING QUOTATIONS
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	120,000	$125	$125	g £1,500,000 s $16,000,000 i $250,000	$2,029,390	31-6-10	£2. for first half year ending 30-6-10, @ ex 1|9⅜ = $22.456	5%	$927½ sales £87
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	e £4,099 $400,000	$34,167	31-12-09	$2 (London 3|6) for 1903	....	$78 buyers
MARINE INSURANCES.											
Canton Insurance Office, Ld.	1881	$2,500,000	10,000	$250	$50	$1,560,000 j $254,583 u $302,799	Nil.	31-12-08	$10 for 1908	5½%	$190 buyers
North China Insurance Co., Ld.	1903	£150,000	10,000	£15	£5	g £125,000 s Tls. 225,000 u Tls. 335,253 f Tls. 146,586	Tls. 206,573	30-6-09	Final of 7|6 making 15|- for 1908.	5%	Tls. 115
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	s $3,000,000 g £90,000 f $287,984 j $1,449,735 u $713,985	2,552,545	31-12-09	Final of $20 per share, making in all $50 per share for 1908, and an int. div. of $30 per share for 1909	6%	$825 sales
Yangtsze Ins. Association, Ld.	1889	$1,200,000	12,000	$100	$60	$1,000,000 j $371,802 $169,861	$797,602	31-12-09	$12 for year ending 31-12-08 and interim of $3 on account of 1909	7	$200
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 x $550,348 f $61,168	$438,406	31-12-09	$6 and bonus $2 for 1908	7%	$115 sellers
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,460,000	$426,218	31-12-09	$27 for 1908	8%	$355 buyers
SHIPPING.											
China & Manila Steamship Co., Ld.	1882	$750,000	1) 30,000	$25	$25	i $57,734	Dr. $3,777	31-12-09	$4% for 1906	....	$10 buyers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$230,000 i $100,589	Nil.	30-6-10	$2½ for year ending 30-6-1908	....	$23 sellers
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	e $250,000 d. i. $630,000 f $130,545 $ 1 106	$18,026	30-6-10	Dividend of $1½ for half year ending 30.6.1910	8%	$32 sellers
Indo-China Steam Navigation Co., Ld. (Preferred) Do. Do. (Deferred)	1882	m £600,000	2) 60,000 2) 60,000	£5	£5	i £148,891	£15,162	31-12-08	No dividend paid for last two yrs.	....	$58 sales
"Shell" Transport & Trading Co., Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£120,000 i £1,000,000	£205,868	31-12-09	Final div. of 2|6 per share (coupon 14) making in all 4|6 per share for 1909, and an int. div. of 1s. per share on % for 1910	5%	83|6 buyers £11 buyers
"Star" Ferry Co., Ld.	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$6,500 i $55,830	$1,159	30-4-10	A dividend of 7% and bonus of 5% making 12% for year ending 30.4.1910	5% 6%	$23 sellers $10
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	e $520,000 r $83,620	Dr. $8,090	31-12-09	$5 for half year ending 30-6-1910.	6%	$150 sellers
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	Dr. $101,851	31-12-09	$3 for 1897	—	$20 sellers
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	d £215,000 h £12,289	....	..	Interim of 1|6 for 1910 (coupon 14)	9%	Tls. 15 sellers
Headwaters Mining Co.	1908	₱600,000	28) 600,000	₱10	₱10				First year		₱10 buyers
Raub Australian Gold Mining Co., Ld	1892	£200,000	150,000 50,000	£1 £1	18-10 £1	£4,873	Dr.	..	1|2 per share, 13th div.	5%	$7½ sellers
Oriental Consolidated Mining Co. Ld.	....	g $5,000,000	500,000	g $10	$10	none	....	..	Final of gold $0.65 for 1909 in all g $1.15	..	30|- buyers
DOCKS, WHARVES AND GODOWNS.											
Fenwick (Geo.), & Co., Ld.	1889	$450,000	x 18,000	$25	$25	$25,275	Dr $8,460	31-12-09	$1½ for year ending 31-12-06	....	$9 sellers
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$3,000,000	60,000	$50	$50	$550,000 i $31,993 s $40,000	$4,848	31-12-09	$2½ for 1909	4½%	$54 buyers
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	i $88,214 v $221,000	$148,940	30-6-10	3% for half year ended 30-6-1909	..	$50 sellers
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	....	..	Final of Tls. 3½ making Tls. 6 in all for year 30-4-1910	8%	Tls. 75 sellers
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	36,000	Tls. 100	Tls. 100	b Tls. 697,257 r Tls. 50,000 e Tls. 125,000	....	. .	Interim of Tls. 3 for 1910	7	Tls. 110 sellers
LANDS, HOTELS AND BUILDINGS.											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 35,000	Tls. 4,314	29-2-09	Tls. 6 for year ending 29-2-10	5⅝	Tls. 97 sales
Central Stores, Ld.	—	$751,845	16) 50,123	$15	$15	n. $1,000	$1,000	31-12-08	8% for 1909	....	$12½ sellers
Hongkong Hotel Co., Ld.	1866	$600,000 $400,000	12,000 8,000	$50 $50	$50 $25	$648,975 r $20,000	$21,477	30-6-10	$3 on old shares, $150 on new shares, for half year ending 30-6-10	5½%	$100 $75
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	$27,971	31-12-09	Interim of 3½ for 1910	7%	$101 saels
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $226,945 20) $25,856	$5,471	31-12-09	45 cents for 1909	5¾%	$7½ sellers
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$269	31-12-09	$2½ for 1909	8%	$32 buyers
Shanghai Land Investment Co., Ld.	1888	Tls. 3,900,000	78,000	Tls. 50	Tls. 50	Tls. 1,523,045 e Tls. 300,000	Tls. 63,969	31-12-09	Interim of Tls. 3 for 1910	6⅜	Tls. 112
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,958	31-10-09	Interim of $1.80 for 1910	8⅞	$39
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 250,000	Tls. 10,991	31-10-09	Tls. 11 for year ended 31-10-09	8⅛	
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	e 20,000	$26,297	30-7-09	50 cents for year ending 31-7-08	....	$3½ buyers

FAR EASTERN STOCKS AND QUOTATIONS—(CONTINUED.)

STOCK.	WHEN ESTABLISHED	CAPITAL.	NO. OF SHARES.	VALUE.	PAID UP.	RESERVE	AT WORKING ACCOUNT.	DATE.	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.	CLOSING QUOTATIONS
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 175,000	Tls. 8,372	30-9-09	Tls. 7½ for year end. 30-9-09 (10%)	10%	Tls. 47½ buyers
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	8,000	Tls. 100	Tls. 100	none	Tls. 4,829	31-12-08	Tls. 6 for 1909	10%	Tls. 50 buyers
Soy Chee Cotton Spinning Co., Ld	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	Tls. 31,173	Tls. 31,173		Tls. 35 for 1909	17%	Tls. 200 buyers
MISCELLANEOUS											
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377.10s.	11) 8,604	12/6	12/6	£1,500	£797	31-12-09	15% for 1909		$8 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	$40,000	Nil.	31-12-08	5% for 1909	6½	$9
China Light & Power Co., Ld.	1901	$300,000	50,000	$5	$5	none	$50,242	31-7-10	60 cents for year ending 28-2-06		$1.40 sellers
Do. do. Special Shares	1907		17) 50,000	$1	$1						
China Provident Loan & Mortgage Co., Ld.	1898 a	$1,250,000	7) 125,000	$10	$10	$80,000	$2,602	31-12-09	80 cents for 1909	10%	$8 buyers
Dairy Farm Co., Ld.	1896	$300,000	40,000	$7½	$6	l $10,000 $10,000	$1,850	31-7-09	$1.20 for year ending 31-7-09	6½%	$19
Green Island Cement Co., Ld.	1897	$4,000,000	400,000	$10	$10	$14,000	$4,290	31-12-09	Interim of 15 cts. per share for 1910	15	$4.65 buyers
H. Price & Co., Ld	1907	$120,000	19) 15,000	$10	$10	none	$1,923.87	31-12-09	14% viz $1.40 for 1909	12%	$12
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$11,798	28-2-10	A dividend of $1.20 per share and a bonus of 10 cts. per share for year end. 28-2-10.	6½	$21
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	$25	k $150,000	$12,662	31-12-09	Interim of $2 per share for 1910	6	$135
Hongkong Rope Manufacturing Co., Ld.	1883	$600,000	$60,000	$10	$10	$40,000	$9,176	31-12-09	Final of $1 per share making in all $2 for 1909	9	$21 sellerss
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	25,000	Glds. 100	Glds. 100	21 Tls 547,500 Tls. 547,500 f Tls. 63,914	Tls. 316,682	31-12-08	Interim Div. of Tls. 12½ 15 March Tls. 12½ 15 June & Tls. 15 15 Sept	5	Tls. 1200
Peak Tramways Co., Ld.	1907	$750,000	25,000	$10	$10	$20,000	$3,014	30-4-10	80 cents on fully paid shares & 8 cents on $1 paid shares for year ending 30-4-10	5¼	$13 sellers
Do. (New)			50,000	$10	$10					5	$1½ sellers
Philippine Co., Ld.	1904	$750,000	75,000	$10	$10	none	Ps. 2,875	31-12-09	None	....	$8 sellers
Robinson Piano Co., Ltd.	1900	$200,000	22) 4 000	$50	$50	$5,000	$61,138	31-8-08	6% for ½ year ending 30.9.07	....	$50 sellers
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 w Tls. 100,000	Tls. 5,250	31-10-08	No dividend this year	2	Tls. 140 sellers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	Dr. $31,096	31-8-09	None	....	$25 sellers
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	$127,86	31-5-10	50 cents for year ending 30-5-10	8	$5½ sellers
Union Waterboat Co., Ltd.	1905	$500,000	15) 50,000	$10	$10	w $11,956	..	31-12-08	60 cents for year-end. 31-12-1908.	6½	$8
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$46,000	$471	31-5-10	15% per ordinary share for year ended 31-5-10	5	$11½ sellers
Watkins, Ltd.	1899	$100,000	10,000	$10	$10	none	$1,941	31-12-09	3½ for 1909	...	$3 sellers
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	e) $300,000 $25,000	$1,776	31-12-09	3% for 1909	....	$6¼ buyers
Weismann Limited	1904	$30,000	3,000	$10	$10	$12,250	$67	31-7-09	10 per cent for year endg. 31.7.08.	10%	$12 buyers
William Powell, Ld.	1901	$105,000	15,000	$7	$7	none	$782	30-6-09	Final of 30 cents making 80 cents for year ending June 30th 1906	....	$2 buyers
Societe des Pulpes et Papeteries du Tonkin		660,000	13,200	50 Haiphong	25 Currency	....	..	....	First year	....	$30 (Hk.Cy.) sel.
RUBBERS											
Allagar Rubber Estates, Ltd	1909	£85,000	29) 750,000	2/-	2/-					....	4/3
Anglo-Malay Rubber Co., Ltd	1905	£150 000	1,500,000	2/-	2/-	....	....	....	80% for year ending 31.12.09	....	23/–
Balgownie Rubber Estate, Ltd.	1905 ††	$200,000	‡‡ 20,000	†† $1	†† $1	$7,400	$11,205	31-3-09	6d per share	....	$12 [Singapore]
Castlefield Rub. Ld., [fully pd.]	1906	£35,000	27) 32,650	£1	£1	none	....	....		....	105/-
Damansara (Selangor) Rub. Co.	1906	£110,000	25 110,000	£1	£1	nil.	£2,220	31-12-08	50% for 1909	....	137/6
Golconda Malay Rubber Co.	1907	£80,000	26 80,000	£1	£1	nil.	nil.	....	25% for 1909	....	110/-
Highland & Lnd. Para R. Co. Do Do. [fully paid]	1906	£310,000	=181,454	£1	£1	£8,784	....	....	35% for 1909	....	101/-
Do. Do. [partly paid]			123,546	£1	15/-						
Kamuning (Perak) Rb. & Tin Co. do do A Shares	1909	£200,000	950,000	2/-	1/-	nil.	nil.	....		....	5/3 prem.
do do B Shares			105,000	£1	£1						
Kuala Lumpur Rubber Co., Ltd.	1906	£180,000	180,000	£1	£1	£4,000	1,82	....	30% for 1909	....	150/-
Linggi Plantations, Ltd. (ord.)	1895 Reconst	£100,000	× 900,000	2/-	2/-	....	....	....	Interim of 1/-	....	45/9
Do. Do. (7% pref.)			10,000	£1	£1		....	....		....	
Ledbury Rubber Estates Ltd	1908	£125,000	§§ 60,000	£1	£1	....	....	....	17½% for 1909	....	72/6
Do. Do. (contrib.)			§§ 40,000	£1	7/6						
Sagga Rubber Co. Ld.	1903	£20,000	24) 2,000	£1	£1	nil.	nil.	....	25% for 1909	....	270/-
Sandycroft Rubber Co.	1904	$100,000	50,000	$2	$2	$20,000	$1,275	31.1.08	50% interim	....	$31
Sekong Rubber Co., Ld	1908	£80,000	27) 80,000	£1	12/6	nil.	nil.	....		....	12/6 prem.
Shelford Rubber State Ld.	1906	£65,000	65,000	£1	£1	nil.	£836	31.12.08	7½% for 1909	....	84/3
Singapore & Johore Rb. Co., Ld.	1903	$250,000	2,500	$2	$2	nil.	nil.	....	25% interim	....	$14
Sungei Choh. Rb. State Co., Ld.	1907	£45,000	45,000	£1	£1	nil.	nil.	....		....	90/-
Sungei Kapar Rubber Co.	1906	£110,000	23) 110,000	£1	£1	nil.	£3,448	31.12.08	37½% for 1909	....	12/9
Toerangie Rubber Co.	1910	30) £100,000	51,000	£1	7/6	....	....	....	First year	....	2/- prem.

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE.	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par. Plus interest
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡		$750,000	$500	§ all	Half yearly, June 30th and December 31st	par
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902		Tls. 543,900	Tls. 100	....	Half yearly, June 30th and December 31st	Tls. 103½
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903		Tls. 500,000	Tls. 100	....	Half yearly, January 1st and July 1st	102½
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par.
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	‖	Half yearly, March 31st and Sept. 30th	Tls. 97½.

a Authorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange and Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repair Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 4,000 shares unissued.
2 First issue of 60,000, of which 10,411 unallotted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unallotted.
6 1,616 shares unallotted.
7 75,000 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 40,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 399 shares unissued.
15 22,277 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 5,000,000.
19 12,000 issued only.
20 Typhoon and Floods Insurance Fund.
21 Special Cash Reserve.
22 1000 shares unissued.
23 10,000 shares unissued.
24 4595 part paid shares.
25 7,500 shares unissued.
26 10,000 shares unissued.
27 2,350 shares unissued.
28 25,000 shares unissued.
29 10,000 shares unissued.
30) 3,700 fully paid vendor shares and an option of 5,000 shares at par for 5 years granted to option holders.
*Based on last year's dividend.
** Based on present dividend.
§ 216 held by the Company.
‖ Only Tls. 134,000 taken up.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Comp., the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 95.
*** Redeemable at par on 30th June, 1915.
Dr. Deficit.
†† Singapore dollars.
‡‡ 4,880 shares unissued.
× 16,756 shares unissued.
§§ 25,000 shares unissued.
4140 shares unissued.

ADDITIONAL SHANGHAI SHARE QUOTATIONS

September 28, 1910

STOCK	CLOSING QUOTATIONS	HIGHEST AND LOWEST PRICES DURING THE WEEK	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	LAST DIVIDEND	WHEN PAID
Oriental Consolidated Mining Co., Ltd.	35[10		G $5,000.000	500,000	G. $10	G. $10	none	Interim of Gold 50 for 1910	June. 10, 1910
Vulcan Iron Works, Limited	Tls. 40		Tls. 500,000	1,000	Tls. 500	Tls. 500	—	Tls. 50 for year ended 31.8.06	Nov. 1, 1906
Yangtsze Wharf & Godown Co. Limited	Tls 207		Tls. 250,000	2,500	Tls. 100	Tls. 100	Tls. 50,000	Tls. 15 for 1909	April 1, 1910
Wei-hai wei Land & Building Co., Limited	Tls 9 nominal		Tls. 91,850	3,674	Tls. 25	Tls. 25	—	Interim of $2.00 for 1909	Aug. 8, 1909
Anglo-German Brewing Co., Limited	$85 buyers		$100,000	4,000	$100	$100	none	5% for 1909	Mar. 12, 1910
Butler Tile Works, Limited	Tls. 25		Tls. 60,000	1,200	Tls. 50	Tls. 50	—	Tls. 3 for year ending 31.3.09	June 8, 1909
Major Bros., Limited	Tls. 55		Tls. 300,000	6,000	Tls. 50	Tls. 50	—	—	—
Oriental Ice Company, Limited	Tls 20		Tls. 130,000	2,600	Tls. 50	Tls. 50	—	First year	—
Scharffs Oil and Bone Mills, Ltd.	Tls. 40		Tls. 200,000	4,000	Tls. 50	Tls. 50	—	First year	—
Shanghai Ice Company, Limited	Tls. 12		Tls. 200,000	8,000	Tls. 25		—	3% for 1907	Mar. 14, 1908
Campbell, Moore & Co., Limited	$10		$12,000	1,200	$10	$10	$9,000	$3 for 1905	Apr. 2, 1906
Dunning & Company, Limited	$35 sellers		$100,000	2,000	$50	$50	—	$5 year ending 28.2.08	Apr. 15, 1908
J. Llewellyn & Co., Limited	$60 nominal		$72,000	1,200	$60	$60	—	7.20 for 1909	May 1, 1910
Lane, Crawford & Company	$ 50		$250 000	2,500	$100	$100	—	Final of 3% making 6% for 1908	June 8, 1909
S. Moutrie & Company, Limited	$40		$250,000	5,000	$50	$50	—	$2 for year ended March 31, 1909	June 18, 1909
Weeks & Company, Limited	$23		$400,000	20,000	$20	$20	$40,000	Final of 6% making 10% for 1909	June 1, 1910
Dominion Rubber Co., Limited	Tls. 62½		Tls. 225,000	22,500	Tls. 10	Tls. 4	—	First year	—
Kalumpong Rubber Co., Ltd.	Tls. 700		Tls. 700,000	14,000	Tls. 50	Tls. 50	** Tls. 11,844.48	16% for 1908	Nov. 9, 1909
Senawang Rubber Estates Company, Limited	Tls. 1550		Tls. 250,000	2,500	Tls. 100 Tls. 100	Tls. 100 Tls. 75	—	—	—
Tebong Rubber and Tapioca Estate, Limited	Tls. 48		£76,000	76,000	£1	£1	—	—	—
Shanghai Mercury, Limited	Tls. 50 buyers		Tls. 105,500	2,100	Tls. 50	Tls. 50	—	Final of 6% making 16% year 1909	June 22, 1910
Shanghai Mutual Telephone Co., Limited	Tls. 67½ buyers		Tls. 675,000	13,500	Tls. 50	Tls. 50	—	Tls. 3 for 1907	June 28, 1909
China Export, Import & Lumber Company, Limited	Tls. 75		Tls. 350,000	500	Tls. 100	Tls. 50	—	5 p. c. for 1909	May 1, 1910
China Printing Co., Limited	Tls.		Tls. 750,000	1,500	Tls. 50	Tls. 50	—	7% 1908	Apr. 18, 1909
Hirano Mineral Water Co., Ltd.	Y. 10		Y. 125,000	5,000	Y. 25	Y. 25	—	10%=yen 2½ for year ending 30th Sept. 08 Y. 1.20 for year ended Feb. 29	Apr. 26, 1909
E. E. Porter & Co., Limited	$50		$100,000	2,000	$50	$50	—	$6 for 1907	Apr. 22, 1908
Shanghai Electric & Asbestos Company, Limited	$21 sellers		$125,000	5,000	$25	$25	—	8% for year ended Feb. 28, 09	June 21, 1909
Shanghai Electric Construction Company, Limited	£6 sellers	£11	£320,000	32,000	£10	£10	—	First year	—

DEBENTURES

LOANS		PRICE—PLUS ACCRUED INTEREST	AMOUNT OF LOAN	OUTSTANDING	NOMINAL VALUE	RATE OF INTEREST	WHEN PAYABLE
Shanghai Municipal Debentures	1892	Tls. 92½	Tls. 50,000	Tls. 45,400	Tls. 100	5 %	June & Dec.
do	1893	,, 96	,, 125,000	" 32,000	" 100	5½ ,,	Do
do	1894	,, 105	,, 105,000	" 60,000	" 100	6 ,,	Do
do	1895	,, 92½	,, 115,000	" 32,600	" 100	5 ,,	Do
do	1896	,, 92½	,, 140,000	" 131,800	" 100	5 ,,	Do
do	1897	,, 92½	,, 268,800	" 268,400	" 100	5 ,,	Do
do	1898	,, 105	,, 300,000	" 60,000	" 100	6 ,,	Do
do	1900	,, 96	,, 33,900	" 31,700	" 100	5½ ,,	Do
do	1901	,, 105	,, 250,000	" 200,000	" 100	6 ,,	Do
do	1902	,, 105	,, 150,000	" 150,000	" 100	6 ,,	Do
do	1903	,, 105	,, 490,500	" 490,500	" 100	6 ,,	Do
do	1904	,, 105	,, 214,500	" 214,500	" 100	6 ,,	Do
do	1905	,, 105	,, 320,000	" 320,000	" 100	6 ,,	Do
do	1907	,, 105	,, 250,000	" 250,000	" 100	6 ,,	Do
Chinese Imperial Government Loan	1886 E	,, 250	,, 767,200	" 351,400	" 250	7 ,,	Mar. & Sept
Shanghai Land Investment Co., Debentures	1890	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	May & Nov.
do	1892	,, 96	,, 250,000	" 250,000	" 100	5½ ,,	June & Dec.
do	1894	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	Mar. & Sept.
do	1896	,, 92½	,, 250,000	" 250,000	" 100	5 ,,	June & Dec.
do	1900	,, 103½	,, 250,000	" 250,000	" 100	6 ,,	April & Oct.
do	1901	,, 104	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
do	1901	,, 96	,, 100,000	" 100,000	" 100	5 ,,	May & Nov.
do	1902	,, 103½	,, 400,000	" 400,000	" 100	6 ,,	June & Dec.
do	1905	,, 103¼	,, 250,000	" 250,000	" 100	6 ,,	Do
Shanghai Waterworks Co., Debentures	1909	,, 103	,, 815,900	" 815 900	" 100	6 ,,	Do
Perak Sugar Cultivation Co., Debentures	1902	,, 101	,, 200,000	" 200,000	" 100	7 ,,	April & Oct.
Shanghai Gas Co., Debentures	1909	,, 103	,, 800,000	" 800,000	" 100	5 ,,	Do
Shanghai and Hongkew Wharf Co., Debentures	1902	,, 102	,, 839,100	" 799,800	" 100	6 ,,	June & Dec.
Astor House Co., Debentures	1905	,, 103	,, 750,000	" 500,000	" 100	7 ,,	Do
British Municipal Council, Hankow	1901	Sh. ,, 105	H'kow Tls 100,000	H'kow Tls 100 000	" 100	7 ,,	June & Dec.
Shanghai Club Debentures	1907	,, 100	Tls. 170,000	Tls. 170,000	" 100	6 ,,	Do
Country Club Debentures		,, 97	,, 139,000	" 139,000	" 100	6 ,,	Do
do	1907	,, 97	,, 92,000	" 92,000	" 100	6 ,,	Do
Lane Crawford & Co., Debentures	1907	,, 102½	,, 110,000	" 110,000	" 100	7 ,,	Mar. & Sept.
Anglo-French Land Debentures	1908	,, 102	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
Central Stores Ltd Debentures	1908	,, 102½	,, 250,000	" 250,000	" 100	8 ,,	Do
Shanghai Mutual Tel. Co Debentures	1909	,, 102½	,, 350,000	" 200,000	" 100	6 ,,	Do

SINGAPORE SHARE QUOTATIONS

(Courtesy Messrs. Fraser & Co., Brokers, Singapore, September 28, 1910)

Date of Formation.	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers.	Sellers.
								MINING		
1903	$300,000	300,000	30.000	10	10	....	30% for year ending 31-3-10	Belat Tin Mining Co., Ltd.	3.75	4.00
1907	$300.000	225,000	22,500	10	10	....		Bruang Ltd.	5.25	5.50
1901	$600,000	600,000	60,000	10	10	25,000	6% for year ending 30-4-09	Bruseh Hydraulic Tin Mining Co., Ltd.	4.00	5.00
1907	$400,000	375,000	37 500	10	10	....		Kanaboi. Ltd	2.40	2.60
1901	£60,000	60,000	60,000	1	1	....	2[- interim 1909	Kinta Tin Mines, Ltd.	15.50	16.50
1905	$150,000	99 000	9.900	10	10	6,485.68	35% for year ending 31-12-07	Kuantan Tin Mining Co., Ltd.	....	3.25
1906	£120,000	120.000	120.000	1	1	....	1[- interim 1909.	Lahat Mines Ltd.	8.50	9.00
1906	$450,000	450,000	45.000	10	10	....		Malacca Tin Dredging Co., Ltd.	....	1,50
1906	£30.000	30,000	30.000	1	1	....		Malaya and Siam Corporation Ltd.	....	7[6
1906	£250.000	179,500	500.000e	5/-	5/-	....		Pahang Consolidated Co., Ltd	5[6	6[6
1907	£100,000	80,000	80.000	1	1	....		Pengkalen Ltd	4.75	5.25
1904	£100,000	80.000	80,000	1	1	....		Pusing Bahru Tin Mines, Ltd	6.00	7.00
1904	£120,000	100.000	100 000	1	1	6,000	45% for year ending 30-6-07	Pusing Lama Tin Mines, Ltd.	2.00	3.00
1907	$450,000	300,000	30.000	10	10	....		Rahman Hydraulic Tin, Ltd.	9.75	10.25
1905	£27,000	27.000	27.000	1	1	....	1[- for 1907	Rambutan, Ltd	10.50	11.50
1892	£200,000	200,000	200.000	1	1	4,873	1[2 paid April, 1910	Raub Aust. Gold Ming. Co., Ltd,	4 50	5.00
1905	£40,000	40,000	40.000	1	1	....		Redhills Tin Mining Co., Ltd.	2.50	3.50
1900	$110,000	110,000	22.000	5	5	....	3% for year ending 22-1-09.	Royal Johore Tin Mining Co., Ltd.	1.00	1.25
1907	$550,000	500,000	50.000	10	10	....		Salak South, Ltd.	1.50	3.00
1907	£80,000	80.000	80.000	1	1	....		Sempam Tin Mines. Ltd	1.25	1.75
1906	$850,000	850,000	85.000	10	10	25,000	5% interim 1909	Serendah Hydraulic Tin Ming. Co., Ltd.	5.25	6.00
1899	$230,000	230,000	23.000	10	10	....	3% for ½ year ending 31-12-08	Sipiau Tin Co., Ltd	1.50	2.00
1909	$200,000	$150,000	15.000	10	10	....		Sungei Gau Tin Mining Co., Ltd	....	4.00
1907	£90,000	70,000	70,000	1	1	....	1[6 interim 1909	Tekka, Limited	21 00	22.00
1906	£150,000	150,000	150,000	1	1	....	1[- interim 1909	Tongkah Harbour Tin Dredging Co., Ltd.	9.75	10.25
1902	£160,000	160,000	160,000	1	1	....	3[- interim 1909	Tronoh Mines, Ltd.	14.00	15.00

SINGAPORE SHARE QUOTATIONS.—(CONTINUED.)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers.
								STERLING RUBBER		
1909	£85,000	75,000	750,000	2/-	2/-	—		Allagar Rubber Estates, Ltd	....	5/-
1905	£150,000	150,000	1,500,000	2/-	2/-	—	80% for 1909	Anglo-Malay Rub. Co., Ltd.	1.2.9	1.3.9
1909	£50,000	35,250	470 000	2/-	1/6	—		Batang Malaka Rubber Estates, Ltd.	0/6	1/- p.
1904	£30,000	20,187 10/-	19,000 4,750f	1	1	—	50% for 1909	Batu Caves Rub. Co., Ltd.	15.10.0	16.10.0
1906	£80,000	70,000	70,000l*	1	5/-	—	2½% for 1909	Batu Tiga (Selangor) Rubber Co., Ltd.	3.17.6	4.2.6
1909	£100,000	74,454	57,816	1	1	—		Bukit Kajang Rubber Estates, Ltd	2.0.0	2.2.6
			22,184n*	1	1	—		" " " part paid	1.15.0	1.17.6.p
1907	£30,000	25,500	24,000	1	15/-	—		Bukit Lintang Rubber Estates, Ltd.	4.0.0	4.10.0
			6,000	1	1	—		" " " part paid	2.2.6	2.7.6p.
1903	£70,000	66,700	66,700	1	5	2,000	90% for 1909	Bukit Rajah Rubber Co., Ltd.	15.0.0	15.10.0
1906	£35,000	30,000	30,000	1	1	—		Castlefield (K.) R. Estate, Ltd.	4.7.6	4.17.6
1909	£225,000	175,000	1750,000	1	1	—		Chersonese (F.M.S.) Estates, Ltd	3/6	4/-
1904	£16,000	16,000	100,000	2/-	2/-	—	75% for 1909	Cicely Rubber Estates Co., Ltd.	1.18.0	2.0.0
			60,000	2/-	2/-	—	78½% for 1909	" " " " 5% *Pref*	1.18.0	2.0.0
1905	£75,000	62,007	620,070	2/-	2/-	1,000	50% interim	Consolidated Malay Rub. Estates, Ltd.	1.3.0	1.4.0
1906	£110,000	102,500	102,500	2/-	2/-	—	50% for 1909	Damansara (Selangor) Rubber Co., Ltd.	7.0.0	7.10.0
1903	£600,000	447,200	447,200a	1	1	—		Duff Development Co., Ltd.	13/-6	14/6
1909	£45,000	40,000	400,000	1	1	—	15% for 1909	Edinburgh Rub. Estates, (Selangor) Ld.	12/-6	13/6
1907	£80,000	70,000	70,000	2/-	2/-	—	25% interim	Golconda Rubber Co., Ltd.	5.10.0	5.15.0
1906	£310,000	305,000	305,000	1	1	8,784	35% for 1909	Highlands & Lowds. Para Rub. Co., Ltd.	4.18.9	5.2.6
1904	£50,000	30,000	30,000	1	1	2,500	25% interim	Inch Kenneth Rubber Estates, Ltd	12.0.0	13.0.0
1909	£200,000	143,750	775,000p	1	1	—		Kam. (P.) R. & T. Co., Ltd. "A" Shares	4/-6	4/9 p.
			105,000	2/-	1/-	—		" " " " "B" "	....	nom.
1905	£65,000	65,000	65,000	1	1	—	10% for 1909	Kapar Para Rubber Estates, Co., Ltd	9.5.0	9.15.0
1909	£35,000	£17,250	95,000	1	1	—		Kota Tinggi Johore Rubber Co., Ltd	2/3	2/6
			155,000	2/-	2/-	—		" " " "	0/3	0/6 p.
1906	£180,000	180,000	180,000	2/-	1/-	....	30% interim	Kuala Lumpur Rubber Co., Ltd	7.7.6	7.15.0
1907	£100,000	90,000	900,000	1	1	—	25% for 1909	Labu (F. M. S.) Rub. Co., Ltd.	14/-	15/-
1907	£320,000	£252,067/10/-	198,930v	2/-	2/-	—	27½% for 1909	Lanadron Rubber Estates, Ltd	5.0.0	5.5.0
			70,850	1	1	3,000	27½% for 1909	" " " part paid	3.10.0	4.0.0 p.
1908	£125,000	75,000	60,000g*	1	15/-	—	17½% for 1909	Ledbury Rubber Estates Ltd.	3.12.6	3.15.0
			40,000	1	1	—	17½% for 1909	" " " part paid	1.17.6	2.0.0p.
1895	£100,000	98,324 8/-	883,244w	1	7/6	4,000	50% interim	Linggi Plantations Ltd.,	2.9.0	2.10.0
			10,000	2/-	2/-	—	7% for 1909	" " " 7% *Pref*	....	nom.
1907	£140,000	118,000	1,180,000k	1	1	—	12½% for 1909	London Asiatic R. & Produce Co., Ltd.	10/-9	11/9.
1909	£220,000	147,500	50,000	2/-	2/-	—		Lumut Rubber Estates, Ltd.	....	nom.
			150,000	1	1	....		" " " " part paid	15/-	17/6 p.
1906	£400,000	300,000	185,000	1	13/-	—	10% interim for 1909	Malacca Rubber Plants., Ltd.	7.0.0	7.10.0
			115,000	1	1	—	" " "	" " " " 7½% *Pref.*	7.0.0	7.10.0
1909	£210,000	175,000	1,750,000	1	1	....		Merlimau Rubber Estates, Ltd.	5/-	5/6
1903	£30,000	22,500	225,000	2/-	2/-	—	125% for 1909	Pataling Rubber Estates Synd. Ltd	2.13.0	2.14.0
1906	£85,000	85,000	850,000	2/-	2/-	—	12½% interim 1909	Perak Rubber Plantations, Ltd	8/-	9/-
1909	£60,000	36,875	15,000s*	2/-	2/-	—		Rembia Rubber Estates Ltd.	....	nom.
			35,000	1	1	—		" " " 6% *Cum. Pref.*	1/6	3/6 p.
1904	£25,000	19,092	17,732u 2,268	1 1	12/6 1	—	25% interim	Sagga Rubber Company, Limited	10.10.0	11.0.0
1905	£100,000	100,000	71,378 28,622l‡	1 1	12/- 1	....		Sapong Rubber and Tobacco Estates, Ltd.	1.2.6	1.5.0.
1907	£100,000	100,000	100,000	1	1	—	15% for 1909	Seafield Rubber Co., Ltd	6.15.0	7.0.0
1898	£30,000	30,000	300,000	2/-	2/-	3,000	287½% for 1909	Selangor Rubber Co., Ltd	2.16.0	2.18.0
1909	£50,000	32,000	40,000	1	16/-	—		Sendayan (F. M. S.) Rubber Co., Ltd	1.15.0	2.0.0 p.
1906	£65,000	65,000	65,000	1	1	—	7½% for 1909	Shelford Rubber Estate, Ltd	3.10.0	3.13.0
1909	£150,000	78,500	14,000i‡ 86,000	1 1	1 15/-	—		Sialang Rubber Estates, Ltd	12/6	17/6 p.
1909	£120,000	100,000	100,000	1	1	....		Singapore Para Rubber Estates, Ltd.	2.17.6	3.0.0
1906	£192,500	192,500	1,925,000	2/-	2/-	....	17½% for year ending 31-3-10	Straits Settlements (B.) Rub. Co., Ltd	6/9	7/-
1907	£45,000	45,000	45,000	1	1	....		Sungei Choh Rub. Estate, Co. Ltd.	4.10.0	5.0.0
1906	£110,000	100,000	1,000,000	2/-	2/-	—	37½% for 1909	Sungei Kapar Rubber Co., Ltd	13/-	14/-
1907	£70,000	55,000	55,000	1	1	—		Sungei Salak Rubber Co., Ltd	3.10.0	3.15.0
1904	£50,000	50,000	50,000	1	1	—		Sungei Way (Selangor) Rub. Co., Ltd	5.0.0	5.5.0
1908	£150,000	60 000	36,000	1	1	—		Tebrau (Johore) Rubber Co	3.10.0	4.0.0
			64,000	1	7/6	—		" " " part paid	2.5.0	2.10.0p.
1907	£200,000	170,000	170,000	1	1	....	5% interim	United Serdang (S.) R. Plantations, Ltd.	5.0.0	5.10.0
1908	£85,000	65,000	650,000	2/-	2/-	....	10% for year ending 30-6-09	United Sumatra Rubber Estates, Ltd.	8/-	8/6
1904	£60,000	50,600	506,000	2/-	2/-	....	250% for year ending 31-3-10	Vallambrosa Rubber Co., Ltd.	1.19.0	2.2.0
								DOLLAR		
1909	$120,000	105,000	105,000w*	1	1	—		Alor Gajah Rubber Estate, Ltd	1.60	1.80
1909	$750,000	700,000	140,000	5	5	....		Ayer Panas Rubber Estates, Ltd.	7.50	7.75
1905	$200,000	151,200	151,200	1	1	5,250	40% interim	Balgownie Rub. Estate, Ltd	10.50	11.00
1910	$500,000	500,000	50,000	10	10	—		Bukit Timah Rubber Estates, Ltd	13.00	14.00
1910	$750,000	700,000	70,000	10	10	—		Changkat Serdang Estates, Ltd	9.50	10.00
1909	$300,000	300,000	300,000	1	1	....		Glenealy Plantations, Ltd	1.50	1.80
1910	$200,000	144,285	12,857m‡	5	5	—		Haytor Rubber States, Ltd	....	nom.
			20,000	5	4	—		" " " " part paid	1.00	2.00 p.
1910	$600,000	150,000	30,000	10	5	—		Henrietta Estates, Ltd.	par.	1.00 p.
1909	$250,000	200,000	20,000	10	10	....		Indragiri (S.) R. and Gutta P. Co., Ltd.	17.00	17.50
1910	$350,000	291,000	11,000	5	5	—		Kelemak Rubber Estate, Ltd.	3.50	4.00
			59,000	5	4	—		" " " part paid	2.00	1.50 dis.
								Kombok Rubber Co., Ltd	20.00	25.00 p.
1907	$300,000	140,000	20,000	10	7	....		Malakoff Rubber Co., Ltd.	2.00	2.25
1910	$1,000,000	1,000,000	500,000	2	2	—		New Singapore Rubber Co., Ltd	6.00	6.50
1910	$1,250,000	1,250,000	250,000	5	5	—	5% interim	Pajam Limited	11.00	12.00
1909	$400,000	400,000	80,000	5	5	—		Pantai, Limited	1.00	1.10
1909	$200,000	200,000	200,000	1	1	—	7½% interim	Pegoh, Limited	27.50	28.50
1909	$500,000	450,000	45,000	10	10	—		Port Dickson Rubber Co., Ltd	13.00	14.00
1910	$450,000	295,000	45,000f‡	5	5	—		" " "	5.00	6.00 p.
			35,000	5	2	....		Pulo Daat Plantations, Ltd.	1.00	1.20
1910	$200,000	150,000	150,000	1	1	20,000	50% interim	Sandycroft Rubber Co., Ltd.	27.50	29.00
1904	$100,000	100,000	50,000b*	2	2	—	25% interim	Singapore & Johore Rub. Co. Ltd	12.00	12.50
1903	$450,000	417,300	208,650	2	2	—		St. Helena Rubber Coy., Ltd.	28.00	30.00
1909	$250,000	100,000	10,000	10	10	....		Teluk Anson Rubber Estate, Ltd.	4.50	5.00
1909	$200,000	165,000	33.000	5	5	—		United Singapore Rubber Estates, Ltd.	1.00	1.25
1909	$1,000,000	637,500	737,500y*	1 1	1 -/50	....		" " " " "	....	nom.
								GENERAL		
1903	£400,000	400,000	400,000	1	1	....		Singapore Electric Tramways, Co., Ltd.	2/6	3/6
1907	$1,500,000	1,065,150	25,000d*	10	10	—	10% for year ending 31/12/08	Eastern Smelting Co. Ltd.	—	10.00 n.
			116,450	10	7	—	10% for year ending 31-12-08	" " " part paid	—	6.00 n
1898	$360,000	360,000	36,000	10	10	170,000	15% & 5% bon. for yr. end. 31-12-09	Fraser & Neave, Ltd.	28.00	30.00
1905	$2,400,000	2,400,000	18,000	100	—	75,000	2½% for year ending 31-10-08	Howarth Erskine, Ltd.	57.00	58.00
			6,000	100	—	—	7% for year ending 31-10-08	" " 7% *Pref*	90.00	92.50
1896	$1,000,000	1,000,000	6,000	100	100	40,600	12% for year ending 31-12-09	Katz Brothers, Ltd. *Deferred*	—	125.00
			4,000	100	100	—	8% " " " " 09	" " 8% *Cum. Pref*	....	nom.
1901	$34,000	34,000	3,400	10	10	—	20% for year ending 31-10-09	Maynard & Co., Ltd.	20.00	21.00
1899	$875,000	875,000	6,000	100	100	175,000	5% for year ending 31/12/09	Riley, Hargreaves & Co., Ltd	80.00	82.50
			2,750	100	100	—	7% for year ending 31/12/09	" " " " 7% *Pref*	102.00	....
1897	£3,500,000	3,500,000	2,500,000	1	1	1,120,000	22½% for 1909	Shell Transport and Trading Co., Ltd	4.0.0	4.2.6
			100,000	10	10	—		" " " " " *Pref.*	11.5.0	12.0.0
1903	$600,000	250,000	25,000n	10	10	....	12½% for year ending 30-6-10	Singapore Cold Storage Co., Ltd	19.00	20.00
1891	$30,000	30,000	600	50	50	23,000	10% for year ending 31-7-09	Singapore Dispensary Ltd.	50.00	52.50
1884	$200,000	200,000	2,000	100	100	75,000	15% for year ending 31-12-09	Straits Ice Co., Ltd	160.00	165.00
1890	$1,000,000	623,000	4,980	100	100	760,000q	5% interim	Straits Steam Ship Co., Ltd.	190.00	200.00
			2,500	100	50	130,000r		" " " " " part paid	50.00	60.00 p.
1887	$3,000,000	3,000,000	300,000	10	10	1,222,409	10% & 5% bon. for half yr. end. 31/3/10	Straits Trading Co., Ltd	56.50	57.00
								DEBENTURES		
								Howarth Erskine, Ltd. 6% $600,000	....	par.
								Riley, Hargreaves & Co., Ltd. 6% 284,000	1%	3% p.
								Singapore Electric Tramways, Co., Ltd. 5% £350,000	....	....
								Singapore Municipal 5% 1,878,000	....	nom.
								" " 4½% of 1907 1,600,000	6%	7% p.
								" " 4½% of 1909 1,000,000	7%	8% p.
								" " 4% 602,900	....	7% dis.

a { 152,800 unissued; 43,949 6% debenture
e { 54,500 £1 Prefs. issued; 45,500 £1 " unissued; 100,000 5/- Ord. "
f 6,250 unissued
k £40,000 6% Debentures 220,000 unissued
p 175,000 unissued "A" shares
q Sundry Reserves.
r "
u 5,000 issued £1 prem.
v 50,220 unissued
w 16,756 "
b* 221 7½% Debentures
d* 8,550 unissued
g* 25,000 "
l* £10,000 Convertible 6% Debentures issued £10,000 do. unissued
n* 20,000 unissued
y* 262,500 "
s* 10,000 "
i‡ 50,000 "
l‡ 6% Deb. Stock Convertible.
m‡ 7,143 unissued.

YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, SEPTEMBER 25TH, 1910.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
Brett & Co., Ltd.	-Y- 28,000	2,800	-Y- 10	-Y- 10	31-12-09	12½%	for 1 year	15 Sellers
Club Hotel, Ltd.	185,000	1,850	100	100	31-3-10	6%	for 1 year	70 Nominal
Grand Hotel, Ltd.	500,000	5,000	100	100	31-6-10	5%	for ½ year	95 Sales.
Helm Bros., Ltd.	186,000	3,720	50	50	31-12-10	17½%	for 1 year	85 Buyers.
Langfeldt & Co., Ltd.	100,000	2,000	50	50	31-6-09	6%	for ½ year	60 Sellers.
C. Nickel & Co., Ltd. †	500,000	20,000	25	25	30-10-09	20%	for 1 year	50 Sellers.
Thwaites, Limited	100,000	2,000	50	50	First Year	—	—	45 Sellers.
Yokohama Engine and Iron Works *	500,000	10,000	50	50	31-5-09	—	for 1 year	55 Sales.
Oriental Hotel, Ltd., Ordinary }	250,000	3,000	50	50	31-8-07	12%	for 1 year	50 Sales.
Oriental Hotel, Ltd., Preference }		2,000	50	50		8%	for 1 year	52:50 Sales
The Union Estate and Investment Co., Ltd. ‡	1,000,000	10,000	100	100	30-9-09	6½%	for 1 year	100 Nominal.
The Clifford Wilkinson Tansan Mineral Water Co., Ltd. §	500,000	5,000	100	100	31-12-09	7%	for 1 year	100 Buyers.

† 285,000 unissued.
‡ 475,000 unissued.
*-Y- 390,000 issued.
§-Y- 375,800 issued.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Brett & Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	95 Sales.
Yokohama United Club	230,000.00	100.00	6%	30 June and 31 Dec.	102 Nominal.
Oriental Hotel, Limited	350,000.00	100.00	8%	1 April and 1 Oct.	103 Sales.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	95 Sellers.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	LAST DIVIDEND.	DIVIDEND PAYABLE.	CLOSING QUOTATION.
Bonds & Debentures.					
Exchequer Bonds 2nd issue	-Y-100	-Y-100	5%	March and Sept.	-Y- 99.70
Exchequer Bonds 3rd issue	100	100	5%	March and Sept.	,, 99.70
Railway Bonds (Ko-Gobu)	100	100	5%	June and Dec.	,, 101.70
4% Imperial Loan Bonds (1st issue)	100	100	4%	June and Dec.	,, 96.10
4% Imperial Loan Bonds (2nd issue)	100	100	4%	March and Sept.	,, 95.10
Imperial 5% Bonds	100	100	5%	March and Sept.	,, 100.50
Special 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 101.10
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 105.00
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 105.50
Osaka City Harbour Construction Bonds	100	100	6%	June and Dec.	,, 105.50
Osaka City Public Loan Bonds	100	100	6%	June and Dec.	,, 105.50
Kawasaki Dock Yards Co.'s Debentures	100	100	7%	June and Dec.	,, 104.00
Tokyo Race Associations "	500	500	30%	June and Dec.	,, 180.00
Railways & Electric Trams.					
Tokyo Railway Company, Limited	50	50	5 2/5%	June and Dec.	,, 72.70
Yokohama Electric Tramway Company, Limited	50	50	6%	July and Jan.	,, 54.50
Keihin Electric Tramway Company, Limited	50	50	6%	June and Dec.	,, 50.95
Southern Manchurian Railway Co., Ltd.	100	20	6%	June and Dec.	,, 46.00
Hanshin Electric Tramway Co., Ltd.	50	50	12%	May and Nov.	,, 130.00
Cotton Spinnings.					
Kanegafuchi Cotton Spinning Company, Limited	50	50	14%	July and Jan.	,, 103.80
Fuji Gassed-yarn Company, Limited	50	50	14%	July and Jan.	,, 76.60
Tokyo Cotton Spinning Company, Limited	50	50	8%	July and Jan.	,, 42.00
Imperial Hemp Weaving Company, Limited	50	50	12%	July and Jan.	,, 69.55
Nisshin Boseki Kabushiki Kaisha	50	17½	7%	——	,, 12.05
Sugar & Beer Cos.					
Dai-nippon Sugar Refinery Company, Limited	50	50	....	May and Nov.	,, 35.50
Ensuiko Sugar Refinery Company, Limited	50	20	20%	June and Dec.	,, 52.00
Dai-nippon Beer Company, Limited	50	50	12%	July and Jan.	,, 80.80
Kirin Brewery Company, Limited	50	50	7%	July and Jan.	,, 53.00
Docks & Steamships.					
Yokohama Dock Company, Limited	50	33	12%	June and Dec.	,, 63.50
Uraga Dock Company, Limited	50	50	....	July and Jan.	,, 7.50
Kawasaki Dockyard Company, Limited	50	50	12½%	Feb. and Aug.	,, 54.00
Nippon Yusen Kaisha	50	50	10%	May and Nov.	,, 99.90
Hokkaido Tanko S. S. Company, Limited	50	50	5%	July and Jan.	,, 30.25
Miscellaneous.					
Tokyo Electric Light Company, Limited	50	50	12%	June and Dec.	,, 85.70
Tokyo Gas Company, Limited	50	50	13%	July and Jan.	,, 116.55
Yokohama Union Electric Light Company, Limited	50	50	14%	June and Dec.	,, 113.00
Fuji Paper Mills	50	50	6%	June and Dec.	,, 30.00
Otaru Timber Company, Limited	50	50	....	March and Sept.	,, 13.00
Hoden Petroleum Company, Limited	50	50	20%	April and Oct.	,, 67.50
Tokyo Rope Manufacturing Company, Limited	50	50	18%	June and Dec.	,, 112.00
Japan Horse Improvement Company, Limited	50	50	....	March and Sept.	,, 14.00
Tokyo Stock Exchange Company	50	50	15 1/5%	June and Dec.	,, 197.50
Osaka Electric Light Company, Limited	50	50	16%	July and Jan.	,, 102.00
Kobe Electric Light Company, Limited	50	50	14%	July and Jan.	,, 106.00

BANGKOK SHARE QUOTATIONS

(COURTESY MESSRS. EDWARDS & CO., BANGKOK, SIAM.) SEPT. 28, 1910

NAME.	BUYERS.	SELLERS.	LAST SALES.	ESTABLISHED.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND	LAST DIVIDEND
Siam Electricity Co., Ltd.	Tcs. 300	Tcs. 325	Tcs. 325	1901	£ 300,000	30,000	£ 10—	£ 300,000	Tcs. 491,338	12% Tcs. 4 bon.
Paknam Railway Co., Ltd.	,, 200	,, —	,, 220	1893	Tcs. 400,000	5,000	Tcs. 80	Tcs. 400,000	,, 37,566	14%
Siam Tramway Co., Ltd.	,, —	,, —	,, 108	1905	,, 1,450,000	{ 6250 Shares 7250 Deb. 1000 P. Shares	,, 100	} ,, 2,230,000	,, 1,875	—
Meklong Railway Co., Ltd.	,, 90	,, 100	,, 90	1907	,, 2,230,000	22,300	,, 100	,, 223,000	,, 28,000	5%
Bangkok Manufact. Co., Ltd.	,, —	,, —	,, 132	1898	,, 400,000	4,000	,, 100	,, 400,000	,, 60,000	{ 7% per for 6 months
Bangkok Dock Co., Ltd.	,, —	,, 135	,, 135	1865	,, 1,000,000	10,000	,, 100	,, 950,000	,, 220,000	
Siam Steam Packet Co.	,, 80	,, 909	,, 90	1898	,, 190,000	3,800	,, 50	,, 190,000	,, 34,000	5%
Siam Commercial Bank	,, 1,000	,, 1,500	,, 1,000	1906	,, 3,000,000	3,000	,, 1,000	,, 3,000,000	,, 338,850	4% for 6 mos.
Menam Motor Boat Co.	,, 75	,, 90	,, 90	1905	,, 200,000	2,000	,, 100	,, 200,000	—	none
Transport Co., Motor	,, —	,, 75	,, 100	1906	,, 200,000	2,000	,, 100	,, 200,000	—	—
Jenderata Rubber Co.*	,, —	,, 325— Ticals	,, 325 (for six calls)	1906	£ 40,000	4,000	£ 10	£ 7.-paid	—	—
Bagan Rubber Co.	,, —	,, 100	,, 100	1907	Tcs. 300,000	3,000	Tcs. 100	Tcs. 40 per share	—	—
Siam Steam Navigation Co., Ltd.	,, 300	,, 325	,, —	1909	,, 2,000,000	10,000	,, 200	—	,, 10,000	—
Siam Stone Works, Ltd.	,, —	,, —	100	1909	,, 350,000	3,500	,, 100	,, 350,000	—	6% half year
Kombok Rubber Co.	,, 25	,, 35	32	1906	$ 300,000	30,000	$ 100	$7, per Share	—	— —

PHILIPPINE SHARE REPORT

Courtesy B. A. Green, General Share, Bond and Investment Broker.—*Manila, P. I., October 10, 1910.*

Name	Closing Quot'n	When Incorporated	Authorized Capital	Issue Value of Shares	Number of Shares	Number of Shares Subscribed	Paid up	Reserve Fund	Working Account	Date	Last Dividend
American Drug Store	...	1908	₱ 100,000	₱1,000	100	51	₱1,000	₱5,000	₱ 50,000	June 30, 1910.	...
Antamok Valley Mining Co	₱0.40	1909	500,000	1	500,000	320,000	1	...	...	...	First year
Banco Español Filipino	₱235.	1851	3,000,000	200	15,000	12,980	200	408,715	...	July 1, 1910.	5% First Half 1910
Bayhay Valley Oil Co	100.	1909	100,000	100	1,000	...	100	...	...	...	First year
Benguet Commercial Co	85.	1908	200,000	100	2,000	736	100	...	...	...	8% for 1906
Benguet Consolidated Mining Co	0.65	1903	2,000,000	2	1,000,000	495,000	2	...	...	...	...
Bua Mining Co.											
Common	90.	1905	750.000	100	7,000	3,366	100	...	...	...	...
Preferred	140.			100	500	500	100	...	...	...	...
Cadwallader-Gibson Lumber Co	...	1908	1,000.000	100	10,000	8,650	100	...	...	...	...
Camote-Clayton Mining Co	...	1909	400,000	10	40,000	26,000	10	...	...	...	First year
Compania Maritima	50.	1894	510,000	100	5,100	5,100	100	...	...	...	20% for 1902
East Batan Coal Mining Co	33.	1909	3,000,000	50	60,000	40,000	50	...	...	...	First year
El Varadero de Manila	70.	1885	450,000	100	4,500	4,500	100	...	...	...	3½% for 1909
Electrical Supply Co	...	1909	100,000	100	1,000	280	72	...	...	...	First year
Export & Import Lumber Co	...	1908	200,000	200	1,000	1,000	200	...	...	...	...
Escolta Press Inc	105.	1907	50,000	100	500	320	100	...	...	...	12% for 1909
Fabrica de Hielo de Manila	62.	1894	350,000	50	7,000	7,000	50	...	...	...	3% for 1st Qt. 1910
Germinal Cigar Factory	500.	1900	1,500,000	500	3,000	3,000	500	...	...	...	12% for 1909
H. E. Heacock & Co	...	1909	100,000	100	1,000	800	100	...	...	...	First Year
Headwaters Mining Co	10.	1908	600,000	10	60,000	59,800	10	...	...	...	...
Insular Lumber Co	140.	1907	2,000,000	200	10,000	9,000	200	...	...	...	...
Lepanto Mining Co	...	1906	1,000,000	100	10,000	8,000	100	...	...	...	...
Juan Seiboth Co	...	1908	150,000	20	7,500	500	20	...	...	...	...
La Concha Button Factory	90.	1905	75,000	100	750	530	100	...	...	...	15% for 1909
Los Banos Improvement Co	200.	1908	100,000	200	500	500	200	...	...	...	16% for 1908
Lambert, Springer Co	...	1908	200,000	1,000	200	80	1,000	...	...	...	...
Luzon Stevedoring Co	25.	1909	250,000	25	10,000	4,200	25	...	...	...	...
Luzon Sugar Refining Co	...	1882	700,000	100	7,000	7,000	100	...	...	...	3% for 1907
Manila Electric Ry. & Light Co	125.	1903	12,000,000	200	60,000	...	200	...	...	...	4% for 1909
Manila Hotel Co	100.	1909	400,000	100	4,000	3,500	100	...	...	...	Under Construction
Minas Carbon de Batan	240.	1902	1,000,000	200	5,000	1,523	200	...	...	...	...
Mindanao Herald Publishing Co	...	1907	15.000	100	150	75	100	...	...	...	½% for 1908
Paracale Gold Dredging Co	15.	1907	£10,000	£1	10,000	10,000	£1	...	...	...	£1 for 1908-9
Paracale Ext. Gold Dredging Co	10.	1909	₱450,000	₱10	45,000	...	₱10	...	...	...	First Year
Palomar Park Amusement Co	0.25	1908	300,000	1	300,000	...	1	...	...	...	...
Phil. Hemp Machine Co	...	1908	1,000,000	100	10,000	...	100	...	...	...	...
Philippine Publishing Co	120.	1907	600,000	200	3,000	2,187	200	...	...	...	10% interim for 1910.
Philippine Co., Ltd	10.	1904	750,000	10	75,000	75,000	10	...	...	...	...
Philippine Gold Dredging Co	10.	1907	200,000	10	20,000	20,000	10	...	...	...	...
Philippine Rosin & Turpentine Co.	...	1908	150,000	1	150,000	70,000	1	...	...	...	...
Philippine Exploration Co	700.	1908	2,000,000	10	200,000	120,000	10	...	...	...	...
Port Banga Lumber Co	...	1908	100,000	100	1,000	934	100	...	40,000	Oct 1, 1910.	...
Rosenstock Publishing Co	...	1908	75,000	10	7,500	6,000	10	...	...	...	...
San Nicolas Iron Works	100.	1901	300,000	500	600	600	500	...	...	...	15% for 1903
San Mauricio Gold Mining Co	35.	1908	4,000,000	200	20,000	20,000	200	...	...	...	...
Sanitary Steam Laundry	23.50.	1908	100,0000	20	5,000	3,000	20	...	...	...	...
Tarlac Railway Co	65.	1906	150,000	100	1,500	1,500	100	...	...	...	...
Tumbaga Mining Co	15.	1909	1,000,000	40	25,000	24,125	40	...	...	...	First Year
Union Hemp Machine Co	...	1909	50,000	10	5,000	2,600	10	...	...	...	First Year
Walter E. Olsen Co	100.	1909	500,000	100	5,000	2,033	100	...	...	...	First Year
Zamboanga Cold Storage Co	125.	1903	40,000	100	400	200	100	...	...	...	20% for 1909

PHILIPPINE BONDS

	Dated	Authorized	Issued	Outstanding	Par Value	Rate of Int.	When Payable	Last Quotation
Philippine Friar Land Bonds	Feb. 1st, 1904	$7,000,000	$7,000,000	$7,000,000	$ 100	4%	Feb. 1, 1914	104[illegible]
Public Works and Permanent Improvement Bonds	March 1, 1905	$5,000,000	$2,500,000	$2,500,000	$ 100	4%	March 1, 1915	104[illegible]
Do.	Feb. 1, 1906		$1,000,000	$1,000,000	$ 100	4%	Feb. 1, 1916	104[illegible]
Manila Sewer and Water Works Improvement Bonds	June 1, 1905	$4,000,000	$1,000,000	$1,000,000	$ 100	4%	June 1, 1915	104[illegible]
Do.	Jan. 2, 1907		$2,000,000	$2,000,000	$ 100	4%	Jan. 2, 1917	104[illegible]
Philippine Railway First Mortgage Four per cent Thirty Year Sinking Fund Gold Bonds	July 1, 1907	$15,000,000	$5,736,000	$5,736,000	$1000	4%	July 1, 1937	97

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Arnhold Karberg & Co........... 19
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Baldwin Locomotive Works 32
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Bell, David W.................. 18
Bohler Bros & Co................ 57
British American Tobacco Co., Ltd. 35

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California-Manila Lumber Co..... 21
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Chee Hsin Cement Co., Ltd....... 42
China Import Export Lumber Co. 57
China Merchants Steam Nav. Co.. 38
China Mutual Life Insurance Co.. 55
China and Manila S. S. Co......... 31
Chinese Eng. & Mining Co......... Cover
Chinese Eastern Railway........ 16
Cia. General de Tabacos Filipinas. 36
Cia. Trasatlantica 30
Clarke, M. A...................... 44
Cook's Sons, Adam 57
Defiance Machine Works.......... 20
Derham Bros 28
Detroit Engine Works............ 29
Deutsch-Asiatische Bank......... 1
Dickeson, Jones & Co............ 43
Dollar, Co., The Robert......... 39

Earnshaw, M & Co., Inc 7
East Asiatic Dredging Co......... 27
Eastern Engineering Co 5

Electrical Supply Co. Inc.......... 60
Export and Import Lumber Co.... 25
Fearon, Daniel & Co.............. 18-30
Fairbanks Morse & Co............ 5
Ferro Machine & Foundry Co..... 29
Fox Typewriter.................. 33
Fressel, C. & Co.................. 24
Fushun Coal..................... 8

Gardner Governor Co............. 32
General Electric Co... 20
Germann & Co., Ltd.............. 28
Germinal Cigar Factory........... 35
Gordon & Co.................... 4
Grand Rapids Gas Engine & Yacht Co.......... 29
Gray Motor Co................... 29
Green Island Cement Co., Ltd. 40
Greilsammer Bros................ 24

Han-yeh-Ping Iron & Coal Co. Ltd. 59
Hanyang Iron & Steel Works...... 61
Harvey, Stuart S. 45
Hongkong Rope Mfg. Co., Ltd..... 31
Hongkong & Shanghai Banking Corp............ Cover
Hongkong & Whampoa Dock Co., Ltd. 10
Honolulu Iron Works Co......... 56
Hotel de France 57
Hupeh Cement Co............... 42
Imperial Hotel, Ltd............... 52
International Correspondence Schools.............. 13
International Cold Stores, Ltd 41
International Banking Corp....... Cover

Jardine, Matheson & Co........... 25
Kawasaki Dockyard Co. Ltd...... 7
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La Parisien Carriage Factory...... 34
Lambert-Springer Co.............. 60
Lodge & Shipley Machine Tool Co. 27

Malthoid........................ 60
Melchers & Co.................... 10
Michigan Steel Boat Co........... 58
Mitsu Bishi Dockyard & Eng. Works.................. 6
Mitsui Bussan Kaisha............. 5-47
Morse & Son, A. J................ 150
Murray, Wilbur H. Mfg. Co........ 34

New Metropole Hotel........ 52
New Engineering and Shipbuilding Works, Ltd..... 11
Nicholson, C. S.................. 6
Nippon Yusen Kaisha 39
North British Locomotive Co. Ltd. 49

Olsen & Co., Walter E............ Cover

Pacific Mail S. S. Co.............. 37
Pacific Tank and Pipe Co......... 60
Paraffine Paint Co............... 62
Penberthy Injector Co........... 32
Philippine Islands 2
Port Banga Lumber Co........... 24

Racine, Ackermann & Co......... 41
Remington Typewriter Co......... 33
Rose, Downs & Thompson, Ltd.... 46
Russo-Chinese Bank 1

San Miguel Brewery.. 4
Santa Mesa Rope Works........... 13
Schuchardt & Schütte, Berlin..... 43
Shanghai Dock & Eng. Co., Ltd... 12
Shanghai Electric and Asbestos Co., Ltd 46
Shanghai Gas Co., Ltd............. 28

Shanghai Nanking Railway....... 15
Shanghai Machine Co.............. 26
Shanghai Waterworks Co. Ltd...... 50
Shewan, Tomes & Co. 48
Siemens Schuckert............... 17
Siemssen & Co.. 22
Southern Pacific Co.............. 87
South Manchuria Railway Mining Dept.. 3
South Manchuria Railway........ 14
Stevenson & Co., Ltd., W. F........ 10
Strong, Frank L................ 45
Superior Wrench Co.............. 29
Swift & Co...................... 32

Taikoo Dockyard and Engineering Company of Hongkong, Ltd...... 9
Thompson F H.................. 51
Toyo Kisen Kaisha.... 37
Truscott Boat Mfg. Co............ 50
Trussed Concrete Steel Co.... 33
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United States Steel Products Export Co 52

Vander Loo & Co. F. A............ 31
Vulcan Iron Works............... 34
Vulcan Iron Works Ltd........... 13

Warner Barnes & Co., Ltd......... 21
Wen Ming Press.................. 26
White & Co. (Inc.), J. G........... 58
Western Electric Co 55
Westinghouse Brake Co., Ltd.... 48
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Woosung Car Shops.............. 53
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Zimmerman Steel Co............. 58

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The Gray Motor Co.
The Ferro Machine & Foundry Co.

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Gas Engine & Power Co. and Charles L. Seabury & Co (Consolidated)
Fairbanks, Morse & Co.
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Shanghai Electric & Asbestos Co., Ltd.
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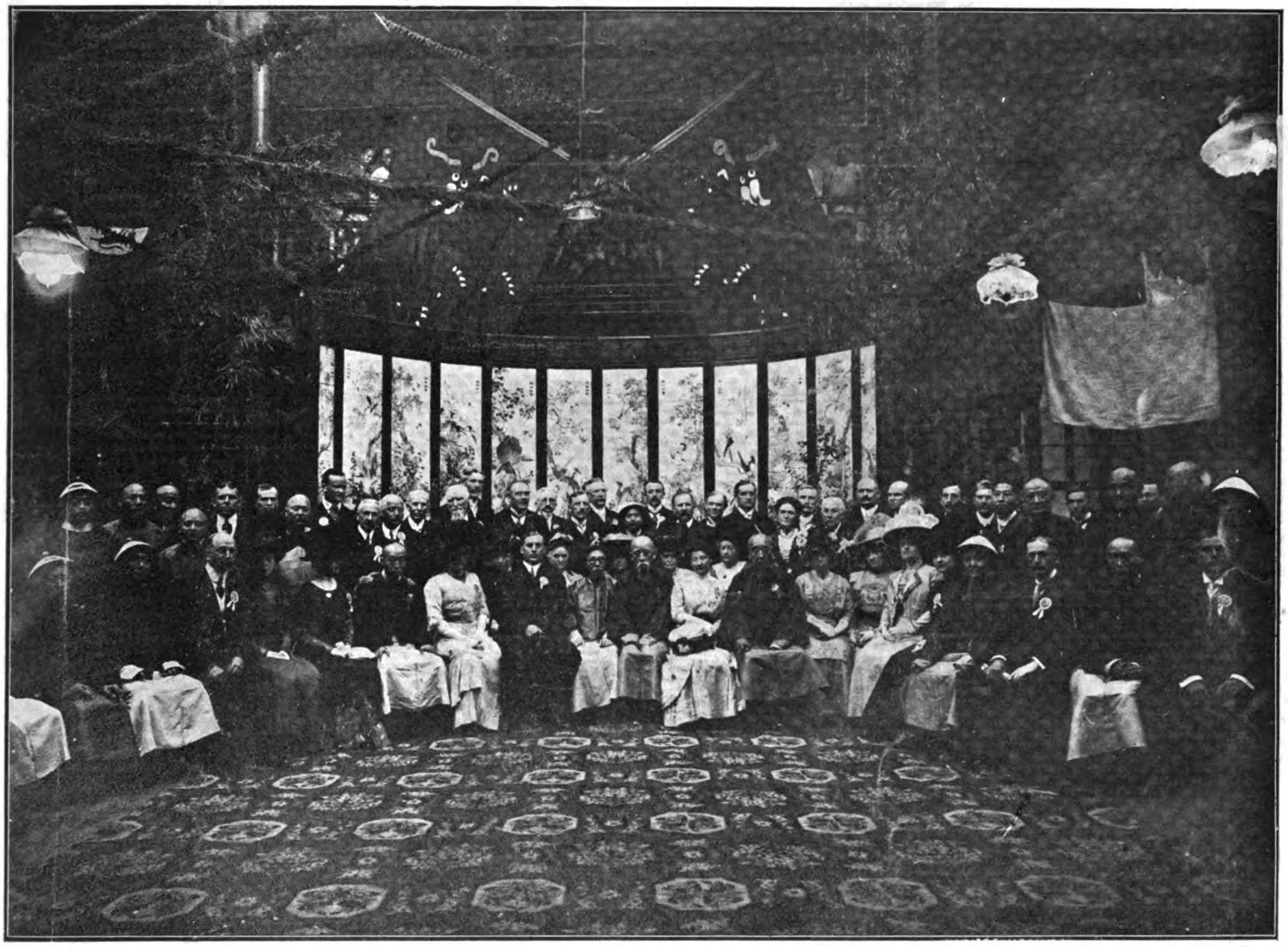
THE FAR EASTERN REVIEW

VOL. VII.—No. 6. MANILA, SHANGHAI AND YOKOHAMA, NOVEMBER, 1910. 50 Centavos Philippine Currency 25 Cents. U. S. C.

VISIT OF THE AMERICAN COMMERCIAL COMMISSION



Reception Held at the Residence of Taotai Chow Ching-seng, Shanghai, in Honor of the Honor Commissioners from the Associated Chambers of Commerce of the Pacific Coast

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Supplement to
THE FAR EASTERN REVIEW
November, Nineteen Hundred and Ten

Honorary Commissioners Representing the "Associated Chambers of Commerce of the Pacific Coast."

From left to right beginning at the top: (1) E. P. BOSBYSHELL. (2) C. HERBERT MOORE. (3) WILLIAM FRANKLIN KNIGHT. (4) GEORGE BURNHAM. (5) WM. H. DICKSON. (6) WILLIAM GERSTLE. (7) FRED L. WALDRON. (8) ROBERT DOLLAR. (9) SAMUEL R. STEIN. (10) ORANGE M. CLARK. (11) CHARLES J. FIELD. (12) WILLIAM PIGOTT. (13) WILLIS HOLYOAKE BOOTH. (14) KARL BUTSCH. (15) RICHARD M. HOTALING. (16) L. R. MANNING. (17) WILLIAM H. WHILBYE. (18) E. S. MOULTON. (19) CHARLES V. BENNETT. (20) E. F. BLAINE. (21) JACOB FURTH. (22) JOHN HENRY SHAW. (23) E. A. YOUNG. (24) EDWARD C. BROWN. (25) C. H. HYDE.

THE FAR EASTERN REVIEW
COMMERCE ENGINEERING FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, NOVEMBER, 1910 No. 6.

VISIT OF THE HONORARY AMERICAN COMMISSIONERS TO CHINA

The visit to China of the Honorary Commercial Commissioners, representing the Associated Chambers of Commerce of the Pacific Coast to China as guests of the Associated Chinese Chambers of Commerce, which included an itinerary of twenty-five Chinese cities and extended over a period of six weeks, was one of the most important events in the history of Chinese-American intercourse. The result means a better understanding between the two peoples together with the extension of international commerce between the two countries. Associations were formed of a nature that will surely tend to strengthen traditional friendship and the precedent once established, we may hope to see an annual exchange of courtesies between the two great commercial peoples whose respective aims are not dissimilar. Throughout the entire tour of Chinese cities from Shanghai where the party arrived, September 16, until its departure from Hong-kong, October 26, the visitors were received with great cordiality and enthusiasm by officials, gentry and merchants, and the Chinese and foreign press devoted columns daily to the detail of the receptions. In all the Honorary Commercial Commissioners numbered twenty five.

RECEPTION GIVEN TO THE PACIFIC COAST COMMISSIONERS AT THE RESIDENCE OF LI CHING CHAI.

The Commissioners sailed from San Francisco on the Korea on August 23 and an organization for the purpose of effectually directing this important visit was effected soon after leaving port.

The following are the officers of the Associated Chambers of Commerce of the Pacific Coast:—President, Mr. Willis H. Booth, Los Angeles; Vice-President, Mr. Wm. L. Gerstle, San Francisco; Secretary-Treasurer, Mr. C. W. Burks, San Francisco.

Executive Committee: Wm. L. Gerstle, San Francisco; J. D. Lowman, Seattle; Everett G. Griggs, Tacoma; F. E. Goodall, Spokane; Wm. McMaster, Portland; Willis H. Booth, Los Angeles; W. S. Mackay, Oakland; [G. A. Davidson, San Diego.

The Hon. Hamilton Butler, American Vice Consul at Tientsin, was official interpreter for the Commission; Charles V. Bennett was secretary and Chas. J. Field, historian.

The party from continental America was entertained at Honolulu by the local Chamber of Commerce.

At Yokohama the Commission was obliged officially to decline warm invitations from

the commercial bodies and officials there as etiquette required that as guests of the Associated Chinese Chambers of Commerce they were not free to accept other foreign hospitality. However, a number of members renewed old friendships among the Japanese by whom they were privately entertained.

It was at Yokohama that Mr. Y. C. Tong, of Shanghai, boarded the Korea with the first greetings of welcome from the Associated Chinese Chambers. Accompanying Mr. Tong were Mr. Chu Pan Tay of Shanghai and Mr. Fung Kwo Shung of the Chinese Foreign Office.

H. E. WU-TING-FANG

FORMERLY MINISTER TO AMERICA, WHO WELCOMED THE AMERICAN COMMISSIONERS AT SHANGHAI

The Nagasaki Chamber of Commerce sent a warm invitation by wireless which also had to be declined. American Consul Deichman gave a reception that was largely attended.

When the Korea arrived at Shanghai, they were met by the following officials and representatives of the Associated Chinese Chambers of Commerce:

Taotai Chow Ching-seng, President of the Shanghai Chamber of Commerce; Mr. Shao-Ging-dow, Vice-President of the Chamber; Mr. Li Yuoing-shu, Taotai Shen Tun-ho, Mr. Run-chi, Taotai Yen Tse-chuing, Mr. L. H. Han, Mr. Tsu Tsing ching, Dr. A. P. Wilder, Consul-General for the United States, Mr. J. R. Patterson, Dr. J. C. Ferguson and others.

The visitors were entertained at Chao's Garden to a garden party where the Commissioners were received by representatives of the Associated Chambers of Commerce and Chinese officials and gentry. The principal Chinese who received the guests were H. E. Shen Tun-ho, Taotai Chou Chin-chen, President of the Shanghai Chinese Chamber of Commerce, and Taotai Yen Tzu-chen, Vice President of the same Chamber, the Shanghai Taotai, the Shanghai City Magistrate, the Mixed Court magistrates and junior officials. In the evening the delegates and the ladies of the party were given a reception at the Y. M. C. A. The following comprised the reception committee: Mr. T. T. Wong, President of the Association; Mr. S. K. Tsao, Secretary; Mr. Chang Niehyin, Chairman of the Social and Entertainment Commitee; Messrs. T. T. Kwong, C. F. Ling, P. Y. Kung and other Chinese. The Rev. W. E. Taylor, General Secretary of the Y. M. C. A., Mr. Charles L. Boynton of the General Committee and Mr. G. A. Fitch, introduced the guests.

President Wong welcomed the visitors and expressed appreciation of America's assistance in making the present commodious quarters of the Shanghai Association possible as well as branches in the principal cities of the Empire. He assured them they would be welcomed in every section of China as there was "a growing consciousness on the part of the Chinese people of the importance of improving commercial relationship with America." Continuing, he said: "I want you to visit the Nanking Exposition and the factories and industrial plants to see what had been accomplished and I hope you will have patience with China. We want your advice and encouragement and to give us the secret of your great prosperity on the Pacific slope, so that we may also share in similar attainments."

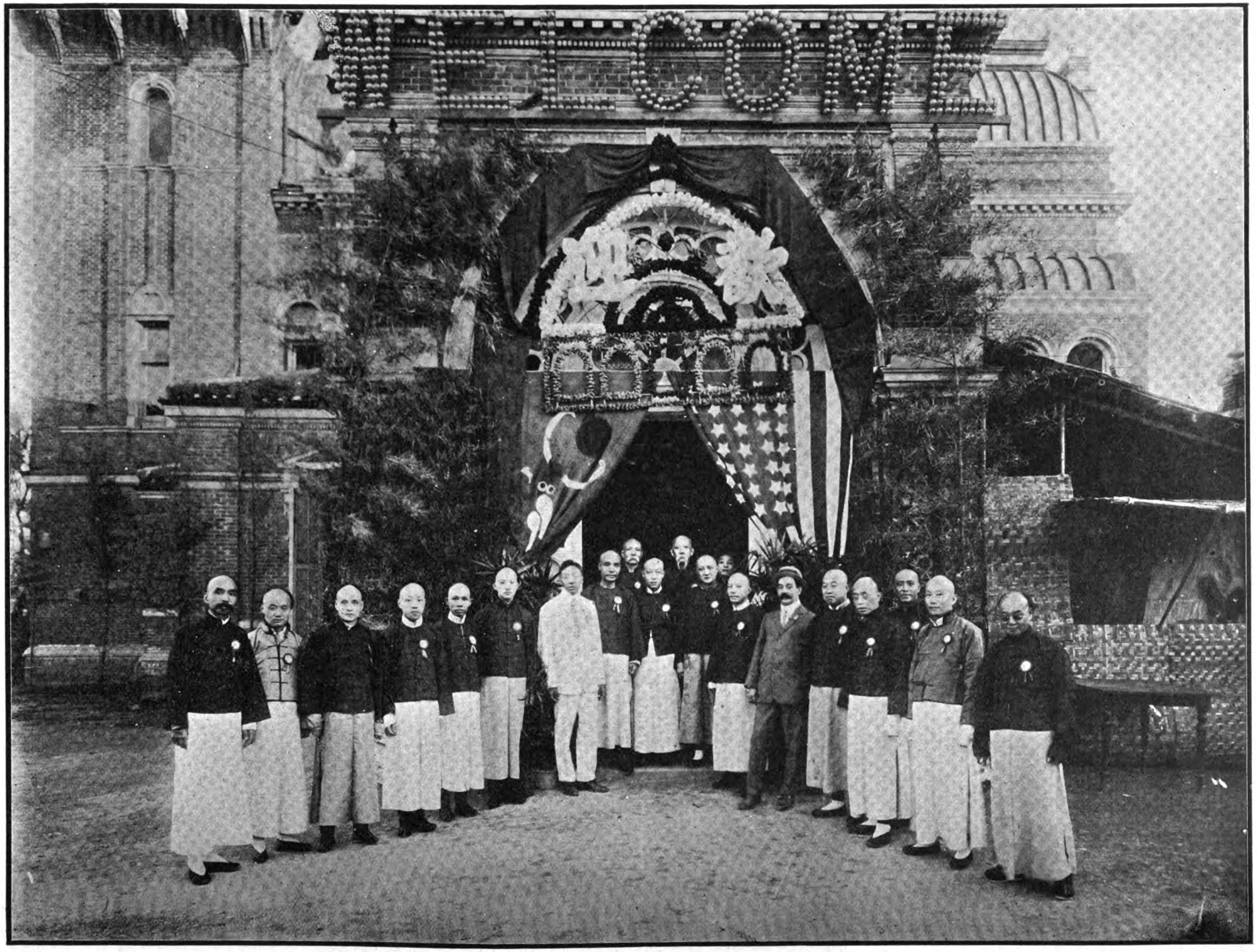
Then followed a reception in honor of the visitors by the American community at the Palace Hotel under the direction of the following committee:

Dr. Amos P. Wilder, Consul-General, (chairman), Messrs. Charles H. Blake, J. C. Fergusson, J. N. Jameson, H. L. Merrill, W. L. Merriman, J. R. Patterson, Geo. A. Stuart, J. A. Thomas, and F. J. Raven (Secretary).

During its visit the party visited the Chinese Bund, the Chinese Water Works, the Kiangnan Docks, Yih Hui Woolen Mills and the Lung Chang Paper Mill and other places of interest. A reception was given by the Shanghai Taotai in the Bureau of Foreign Affairs and also a banquet and theatrical performance in Chang Su-ho's Garden as guests of the Chinese Chamber of Commerce were among the many functions.

The last named event was up to this time the first official function in Shanghai, although, throughout the trips of inspection, the visitors enjoyed many pleasant surprises and were overwhelmed with attentions.

The Chinese banquet was a most elaborate affair. The decorations were superb. His Excellency Shen Tun-ho presided and was supported by H. E. Wu Ting-fang, formerly Chinese Minister to the United States, Taotai Chou Chin-chen, Taotai Chung Mun-yew, Taotai Y. C. Tong, Taotai Yu-Ya-ching, Taotai Yeu Szu-chun, Chu Lau-fang, Chu Li-chi. Dr. Amos P. Wilder was seated on the Chairman's right, with H. E. Wu Ting-fang, on the opposite side of the table. There were also present: Mesdames Weilbye, Moulton, Booth, Gerstle, Patterson, Furth, Dollar, Young, Morton, Read, Manning Holiday, Saunders, Butler, Dickson, Bosbyshell, Piggott, Clark, Howe, Merriman, Hyde, Tucker, Raven, Stuart, Shorrock and Miss Terry, Messrs. Willis, H. Booth, E. S. Moulton, E. P. Bosbyshell, E. A. Young, W. H. Weilbye, Dr. J. M. Shannon, Cal. J. Butsch, O. M. Clark, T. D. Honeyman, G. Burnham, W. F. Knight, W. L. Gerstle, R. M. Hotaling, Robert Dollar, C V. Bennett, J. Furth, E. F. Blaine, S. R. Stern, J. H. Shaw, C. H. Moore, L. R. Manning, W. H. Dickson, L. R. Freeman, C. H. Hyde, E. C. Brown, F. L. Waldron, W. Piggott and C. Field (Commissioners), Messrs. Hamilton Butler, R. W. Dorsey and J. H. Hadley (U. S. Vice-Consuls), Mr. H. F. Merrill (Commissioner of Customs), Mr. J. R. Patterson (President of the American Association of China), Dr. Hawks Pott, Dr. F. E. Hinckley, Dr. J. C. Ferguson, D. Landale (Chairman of the Municipal Council), the President of the French Council, Lieut Col. A. A. S. Barnes, Messrs. J. H. Darrah, T. Cobbs, D. Wilson, J. P. Jameson, H. M. Hykes, J. T. Cokery, E. K. Howe, C. E. Ferguson, P. S. Wisner, G. C. Tucker, A. S. Fobes, W. S. Emens, L. Everett, J. J. Connell, C. D. MacGrath, R. C. Maton, J. K. Davies, F. J. Raven, W. A. Reed, N. T. Saunders, F. D. Cheshire, A. F. Barradas, L. E. Canning, L. E. P. Jones, J. B. A. Mackinnon, M. Laferriere, L. C. Downing, A. Monestier, J. D. Read, F. H. Gamburg Marshall, W. D. Little, E. H. Murray, W. S. Ridge, V. Wright, A. W. U. Pope, J. O'Shea, T. F. Millard, J. D. Smart and others.

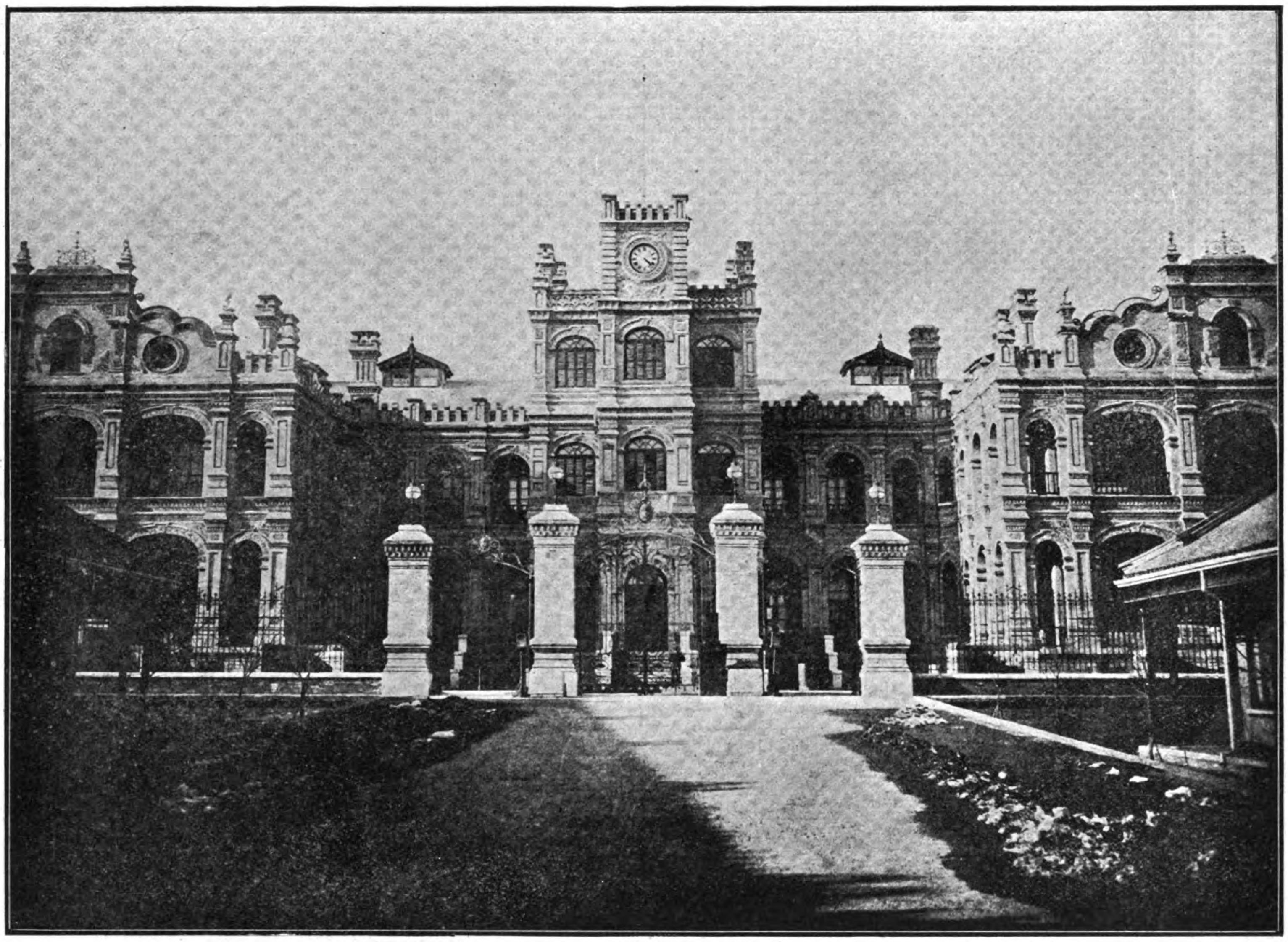


REPRESENTATIVES OF THE ASSOCIATED CHINESE CHAMBERS OF COMMERCE FROM LEFT TO RIGHT. (1) WANG PU YIN. (2) TING FREI CHENG. (3) ....(4) HOONG CHING CHENG. (5) LIANG WEI MING. (6) HOONG CHING CHIA. (7) LEE TSU LIEN. (8) YU YEAO TCHING. (9) YOE PING HANG. (10) SUB-DIRECTOR SHAO CHING TANG. (11) DIRECTOR GENERAL CHOW CHING CHENG. (12) DIRECTOR WANG YIH TING. (13) CHEE TEYO TCHENG. (14) .... (15) BONADAS AT DEH, FOREIGN SECRETARY. (16) CHENG TSANG CHENG. (17) CHEE SING CHIH. (18) KU CHING YOONG. (19) TANG SHAN CHIA.

A semi-foreign menu was served and a theatrical performance continued through the dinner.

H. E. Wu Ting-fang proposed the toast of the President of the United States which was duly honored, following which President Booth proposed the toast of the Emperor of China which was also honored, and then His Excellency proceeded to the official welcome of the guests would enjoy themselves and that they would always remember the Chinese people as friends.

His Excellency was followed by Dr. Wilder and Mr. J. R. Patterson, President of the American Association, after whom Willis Booth, President of the Commission, expressed appreciation of their reception by the commercial bodies represented and emphasized American cannot expect to receive the benefit of China's trade and not give something in return. That is the keynote of this mission and we want China to feel that our labors here are directed entirely to the end of mutual advantage. I sincerely hope that the Dragon and the Eagle may work together side by side for the continued peace and prosperity of China and the United States."



HEADQUARTERS OF THE WAR DEPARTMENT, PEKING

the visitors. He referred to the traditional friendship and the neighborly relationship now that America had acquired islands in the China sea. Touching on several evidences of America as a friend in need, he then referred to the growth of trade between the two countries and said:

"Trade between America and China is increasing every year and it is quite natural that the merchants of both countries should devise means to extend and develop it. Trade and commerce are beneficial to both countries, but in order to further expand, it is necessary for the people of both nations to have personal dealings with each other." He referred to his experience in America where the American businessmen were greedy for information and advice and, while his official position largely prevented him from complying, he gave what he could. "China is in just such a position today. No nation or people is perfect. You will see China's industries, her work, and her people, and you are invited to examine their methods and if you find reason for criticism all I ask of you is to put those interested on the right road to overcome their shortcomings." He hoped that ica's friendship for the people of the Empire. "We have come," said he, "to drink at those fountains of wisdom and knowledge which have been China's greatest heritage for ages and ages. America as a nation is young and we have many things to learn, and of these matters we propose to learn much from our Chinese friends. We come not to teach but to absorb from the Chinese, through personal association, that wisdom and that knowledge of which you have every reason to feel proud."

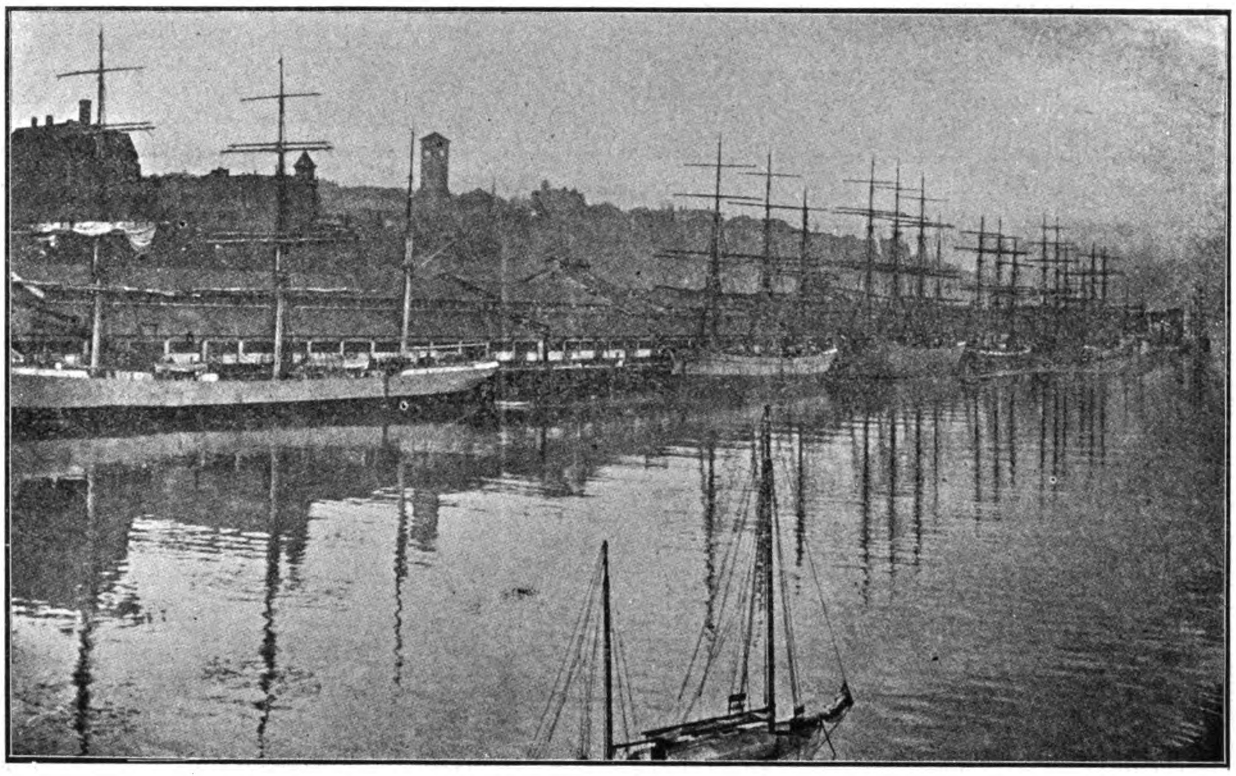
He stated that the visit was essentially of a commercial character, having for its purpose better understanding of Chinese methods and to inform themselves as to the best means of promoting better trade relations. "We have no right," said he, "to come here investigating China's industrial conditions and expect to do business with you unless it is to your interest to do business with us. Our purpose is to find out, if we can, what possible resistance there might be to China doing business with America and to endeavor to eliminate, so far as we can, everything that tends to make it harder to do business together. We cannot expect China to do business with us unless conducted on a reciprocal basis. We

Other functions in Shanghai included a garden party at the International Institute, a press dinner by the Associated Chinese Press at the Palace Hotel.

Visits were made to Hangchow, Nanking and Chinkiang, and from the latter place the party proceeded by the China Merchants' Steam Navigation steamer to Hankow, after a visit to the Ta Yeh iron mines. The Hangyang Iron Works proved of the greatest interest to the visitors. Throughout, they were given a most enthusiastic welcome by officials, gentry and commercial bodies, and the most elaborate entertainment was arranged at every point.

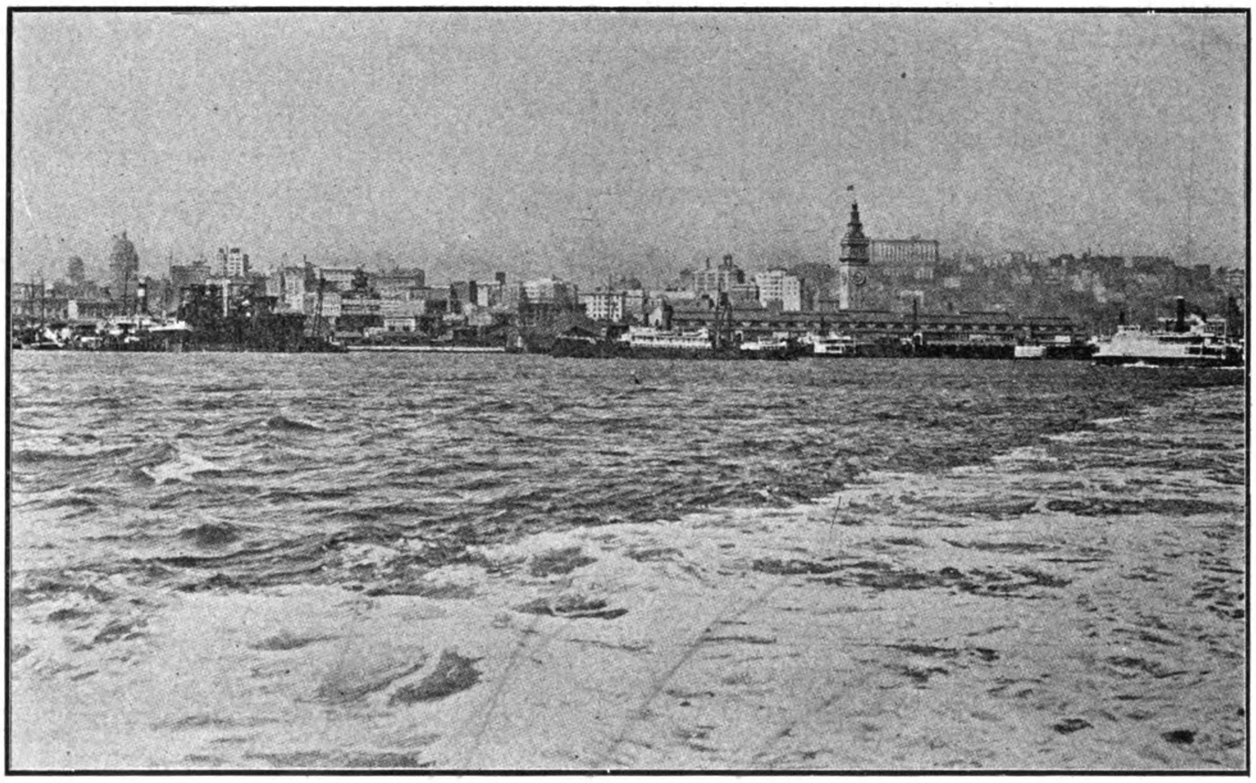
From Hankow, the visitors proceeded to Peking over the Peking-Hankow Railway by special train. At the capital the party put up at the Wagon-Lits Hotel and the visit was marked by a continuous series of functions, among which was an audience with H. I. H. the Prince Regent. They were presented by Minister Calhoun, accompanied by Dr. C. D. Tenney. The Prince Regent welcomed the delegates and expressed the hope that the visit would result in increase of trade between the two countries.

Among the important functions was a tiffin in the reception hall of the Wai Wu-pu as guests of the Grand Councillor Na Tung and of the President Tseo Chia-nai and Vice-



WATER FRONT, TACOMA, WASHINGTON

Presidents Hu Wei-teh and Tsao Ru-ling. A visit was also made to the Winter Palace and a dinner was given by the newly organized senate.



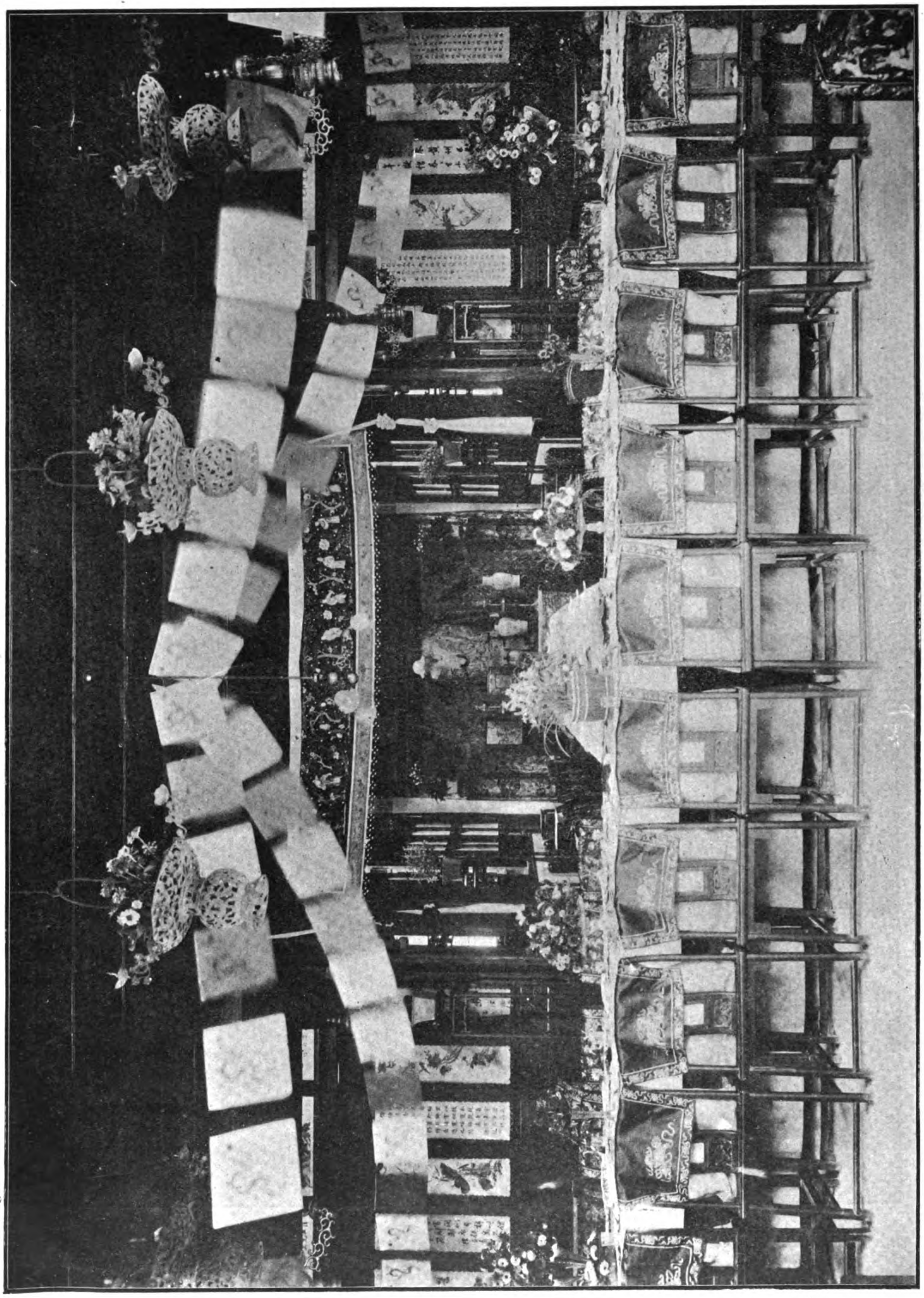
A PORTION OF THE WATER FRONT OF SAN FRANCISCO

Leaving Peking, the party spent a few days in Tientsin visiting the Peiyang University, as guests of the Viceroy, and other places of interest. They were entertained to dinner in the delightful pleasure grounds of H. E. Sun Chung-ying, of the Ministry of Finance and Commerce. During the visit President Wang Chun-ling, of the Tientsin Chamber of Commerce, assisted in making the visit memorable.

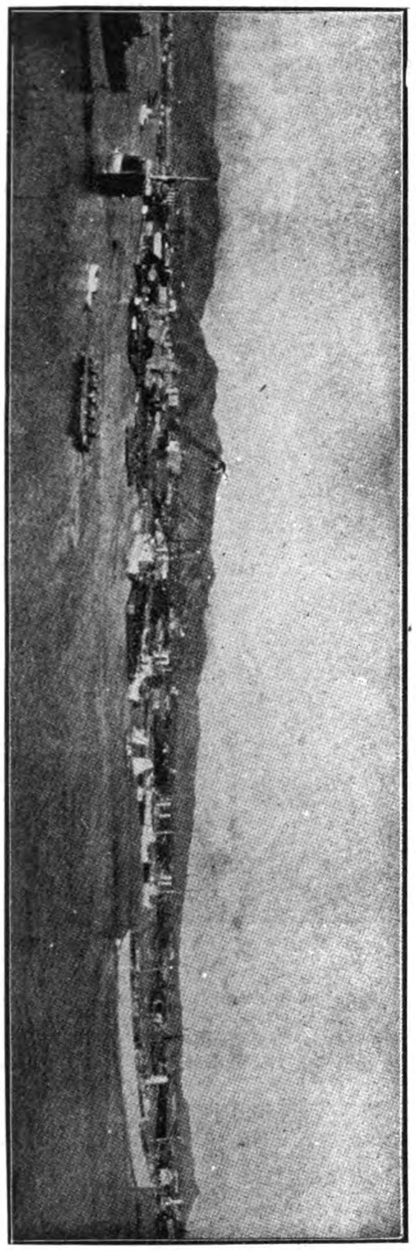
From Tientsin the party proceeded by steamer to Foochow calling at Tsingtao and Chefoo where it was warmly received. From Foochow they proceeded to Amoy where the local Chamber of Commerce had arranged several interesting trips, and tiffin was served at the famous Nam Pu Tao temple.

The delegates then proceeded via Hongkong to Canton where a remarkable program was prepared by the officials and the Chamber of Commerce. The party arrived October 20 and were kept busily engaged visiting the principal points of interest. Among the important functions was a dinner by H. E. the Viceroy, H. E. the Tartar General, and H. E. the Admiral of the Two Kwangs, where notable addresses were heard.

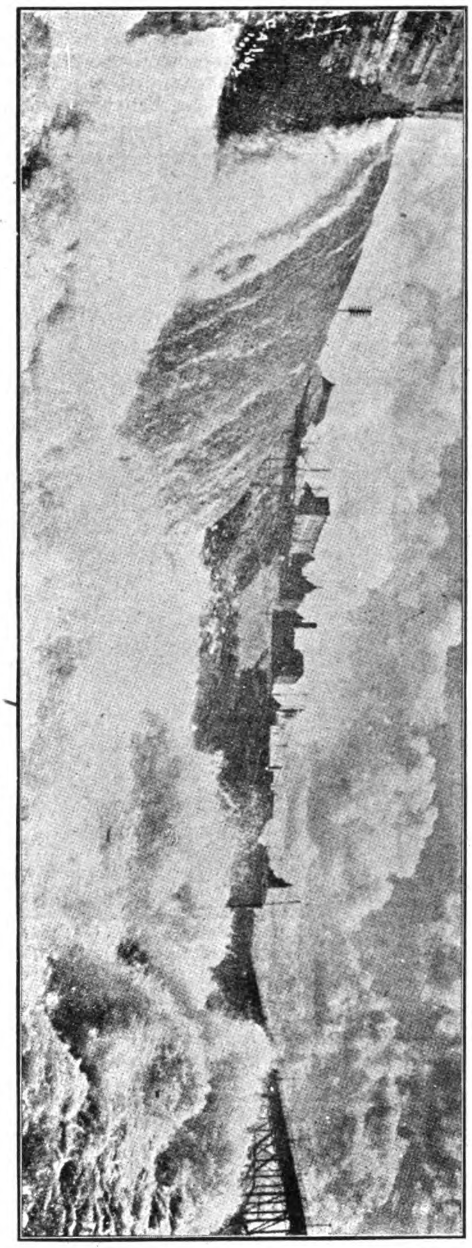
The most important feature of the visit was a trade conference held early in the visit to Canton with the members of the Chamber of Commerce where important subjects were thoroughly threshed out. The



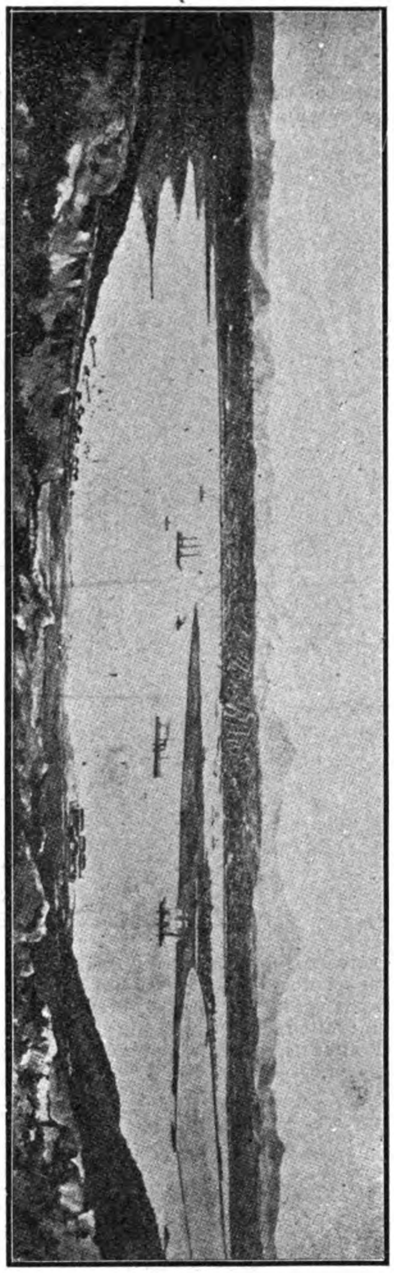
VIEW OF THE BANQUET HALL AT CHANG SU HO'S GARDEN, SHANGHAI, WHERE THE CHINESE CHAMBERS OF COMMERCE ENTERTAINED



HONOLULU.



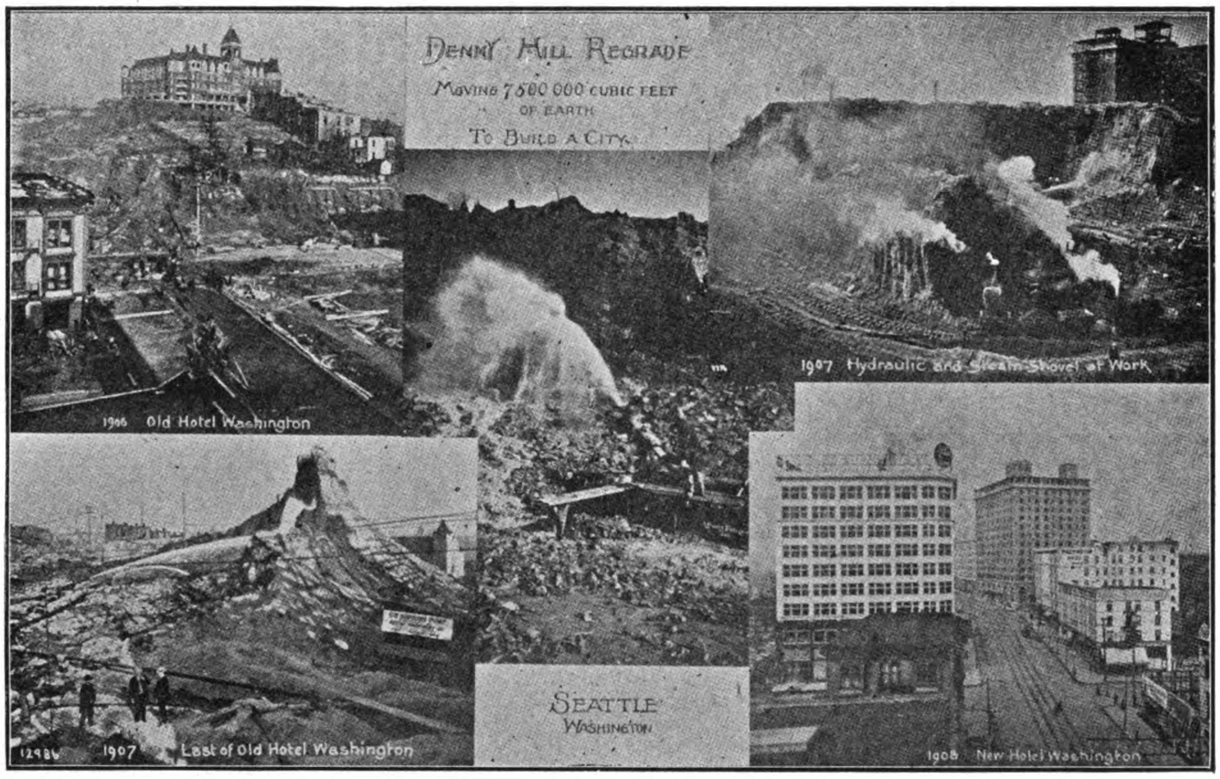
VIEW OF LOWER SPOKANE FALLS



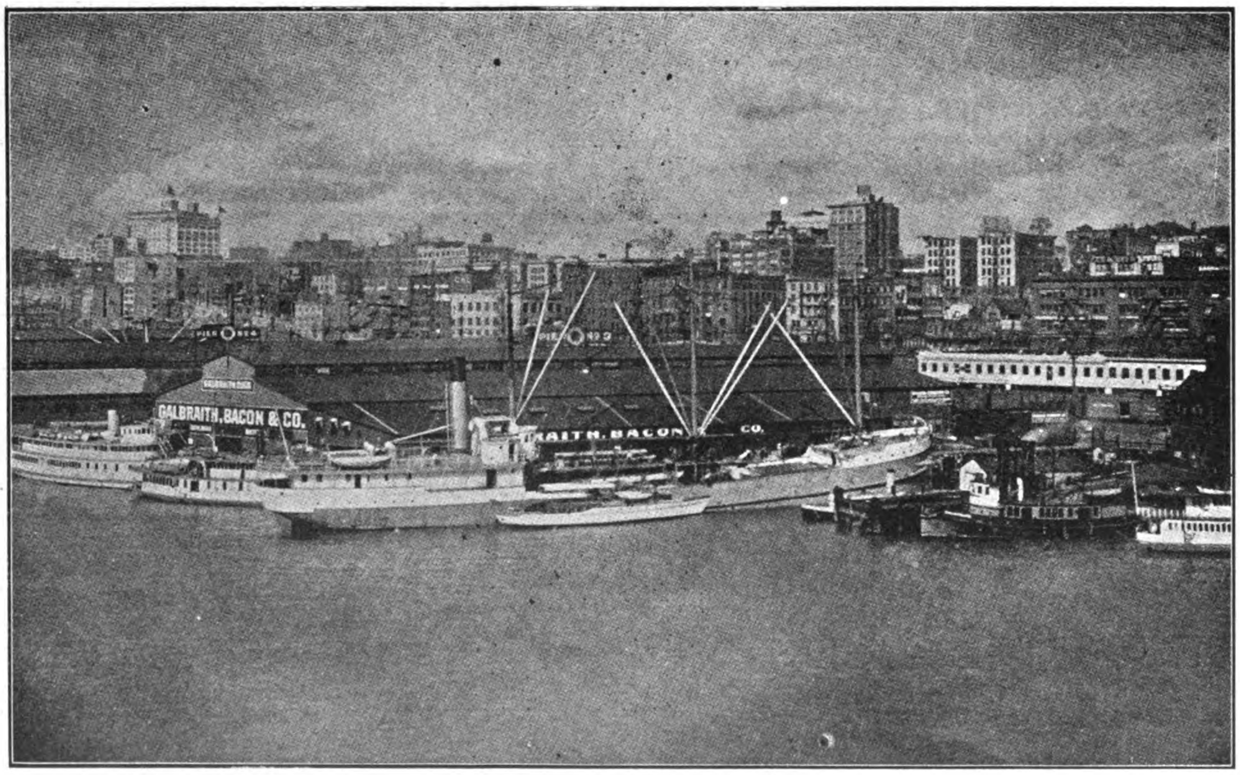
SAN DIEGO BAY

BIRDS' EYE VIEW OF SPOKANE, WASHINGTON.

matting, cotton, silk, tea, ginger, soy, etc., trades were discussed. The outcome among other features resulted in the conclusion that the Chinese and Americans failed to push the sale of their products by having their own representatives on the ground and that



more advertising was needed. The matter of Chinese exclusion came up, but reference to it was delegated to Mr. Robert Dollar who went into the matter thoroughly at a luncheon served after the conference and made a good impression.

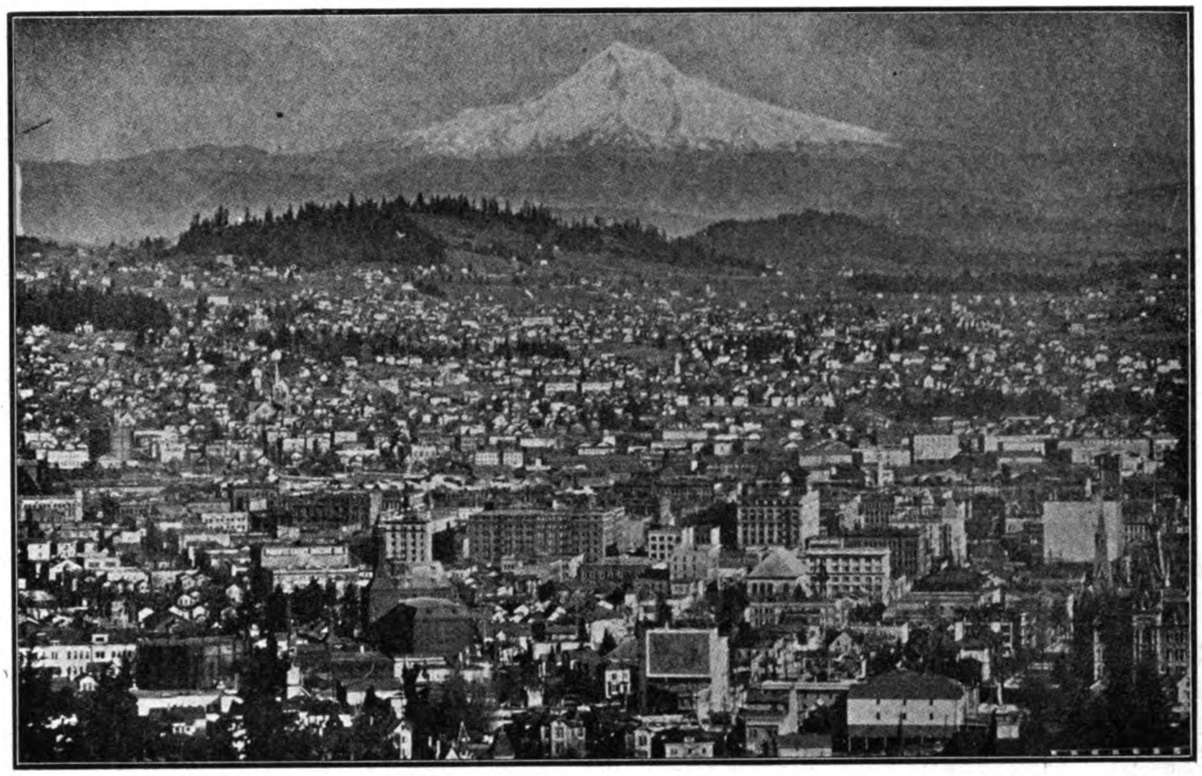


A VIEW OF WATER FRONT OF SEATTLE

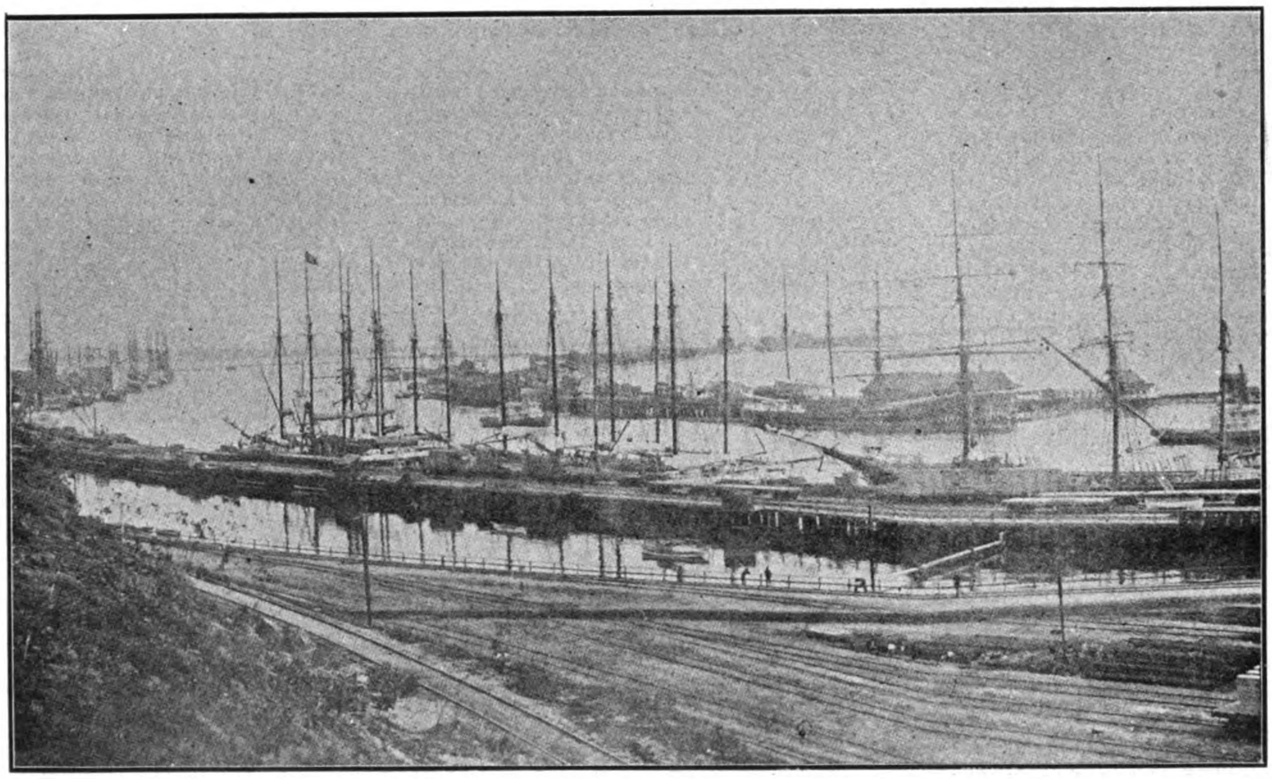
Mr. Dollar stated that he would not go into the merits of the treaty itself as a revision was under way and that might be left to the Chinese and American diplomats, but he would refer to the treatment of Chinese entitled to land at San Francisco. He stated that he had been selected as chairman of a committee of six chosen by the San Francisco Merchants Exchange and the Chamber of Commerce, that this committee had made a full investigation and he believed that he could not do better than read a copy of his report which had been forwarded to President Taft and follows:

"We interviewed the Chinese Chambers of Commerce, the Six Companies, Chinese daily newspapers, and Chinese merchants, and on the other side we had conferences with H. North, Commissioner of Immigration, and several of the immigration officials, and finally we spent a day meeting the Chiyo Maru and another steamer to see what reception the Chinese had, and followed them to the station at Angel Island, where we saw the passengers examined and, through the courtesy of the officials, we were shown through the entire buildings and plant, and were given every facility to see the treatment of the Chinese in every stage of the examinations, and the matter of their treatment before and after deportation, and after impartial consideration of both sides of the question, we find that cause for complaint exists to some extent, but on the whole this has been exaggerated. We found the examinations to be unreasonably severe, and to answer the questions asked correctly was an impossibility, and seeing that the applicants have to prove their own case (in criminal cases, the crim-

inal is considered innocent until he is proven guilty; here, he is considered guilty until he proves himself to be entitled to land) and evidence, if taken literally and compared with the witnesses, is sufficient to exclude every man, woman and child from landing. For instance, the eight or ten year old son of a merchant is asked his grandmother's maiden name, on both his father's and mother's side, the names of people living a block or two distant, their children's names, ages, etc. Then, the father, who has not been home for years, is asked to corroborate his son's statement, which is simply impossible. We find those attempting to land have great difficulty in getting witnesses to go to the station to testify. One young man, a son, had been waiting two weeks. The witnesses arrived when we were there, and he would have no trouble in landing. This refers only to those witnesses who live around the bay, but many arrive whose witnesses live in distant States. The papers have to be forwarded to the representatives of the bureau nearest where the witness lives, and in the event of change of residence or pressure of business of the official, it makes a very long and tedious wait. The system of examining the witness is so complicated that it looks to us that it is impossible for any person to enter who is not entitled to. The buildings, manner of caring for and feeding the immigrants, etc., are all that could be desired, and in justice to those in charge, we congratulate them on the conditions as we found them. We were informed that with those arriving in first class cabin, their examination commenced at Meigg's wharf and was completed as soon as possible, so that they had no delay in landing, and not one in a hundred was detained. The Chinese have furnished us with details of 45 cases, all during 1910. Some of them look bad for the officials, but as we only secured the Chinese version and not the inspector's, we do not think it fair



BIRDS' EYE VIEW OF PORTLAND, OREGON



PORT LOS ANGELES, SAN PEDRO HARBOR

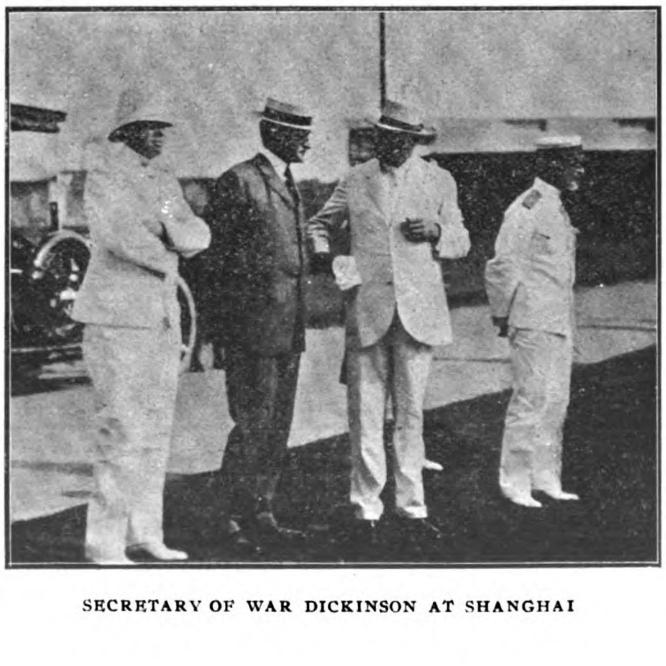
to comment upon them, and for the sake of commercial good-will and justice, we think the government should investigate. If they desire it, we would give them the numbers of the cases, and in the meantime our consuls should be requested to allay the irritation in China, assuring merchants and students who are entitled to land that they will be allowed to land without any indignities being offered them, and that the departments see to it that their instructions are carried out, not in letter only, but in spirit. In the connivance of some of our officials, who would get a certain amount if they landed. It has become a notorious fact that merchants' wives have great trouble landing, while women of the other class have in too many cases no trouble in getting ashore. The Chinese can have no complaint of the exclusion of this class as our laws prohibit their importation from any country. On my visit to Angel Island I saw some white women amongst the Chinese who had also been ordered to be deported. In the case of bona-fide students, for some time, none have been refused admittance. Many are going from Shanghai and there has been no trouble. The Young Men's Christian Association there write to the Y. M. C. A. in San Francisco and a paid Chinese representative goes to meet them on the steamer and gives them all the assistance they may require. This information is not hearsay, as I have given it my personal attention. In conclusion, I earnestly ask you to stop the fraud at your end if there be any, and we request that you see to it that only those who are entitled to land shall be permitted to leave this country. The Japanese Government has attended to this in their case so that all trouble and friction has ceased. I assure you that we will do our best to stop the fraud at our end, and we will do our utmost to see that any Chinese who is entitled to land shall be landed without delay or any indignities being offered to them (applause)."

U. S. GRANT HOTEL, SAN DIEGO, CALIFORNIA

view of the fact that a large number of our most influential merchants leave this coast to visit China next month, we consider the foregoing important. We ask justice and a square deal for those who are entitled to land, the same treatment they give us in landing in China. We offer the following recommendations:—(1) That a more reasonable and rational method of questioning be adopted. (2) That all witnesses, white or Chinese, who live in San Francisco or neighboring towns, be examined in San Francisco, as a witness who has no particular interest in the person might go to San Francisco to testify, but would refuse to go to the island, especially as it often happens that the case would not be reached the first day the witness went, thereby necessitating two or more trips. (3) That examinations be expedited by sending for witnesses, as the party being locked up has not the means of getting them." I think that the Chinese should be examined in Canton or Shanghai by the Taotai and a proper American Government officer, whose certificate shall be final, and any person having that certificate should be allowed to land without further examination. I cannot, however, caution you too strongly to have your government officials see to it that no such fraud is perpetrated, as the fraudulent certificates issued some years ago by corrupt Chinese officials and certified to by mercenary American consuls who, along with their interpreters, suddenly got rich. This was the cause of all the trouble. On my visit to Angel Island, I saw several Chinese women that had been brought over by their owners for immoral purposes. They were caught and ordered to be deported. No doubt they were brought from China by

This was the most important speech made during the entire visit. It was freely interpreted to a large and interested audience and it is believed will do more to eliminate the only cause for friction in commercial relations between America and China than any other influence attending this visit:

The visit to China was concluded by a splendid reception at the Chinese Y. M. C. A., Hongkong, October 26.



SECRETARY OF WAR DICKINSON AT SHANGHAI

Visit to Manila.—In response to a warm invitation from Manila a large number of the delegates proceeded there on the Nikko Maru, October 27, and on the Manchuria, Oct. 31, saiiing again from Manila, November 7th, on the Manchuria. During this short visit trips

H. E. CHUNG MUN YEW, MANAGING DIRECTOR OF THE C. M. S. N. CO. AND OF THE SHANGHAI-NANKING RAILWAY, WHO WAS PROMINENT IN ENTERTAINING THE COMMISSION.

were taken to Baguio, Taal, and many places of interest in and about Manila. The visitors were agreeably surprised at the cleanliness of the capital and the opportunities for trade and investment throughout the islands.

The following is a list with a short sketch of each, divided into groups representing the different chambers of the coast:

The Chamber of Commerce of San Francisco.—Mr. William Lewis Gerstle, president, the Chamber of Commerce of San Francisco; vice-president, the Associated Chambers of Commerce of the Pacific Coast; vice-president, San Francisco Convention League; president, Alaska Commercial Company; president, Appollo Consolidated Mining Company; vice-president, Yukon Express Company; secretary and treasurer, Northern Navigation Company; secretary, Fairbanks Telephone Company; director, Alaska Packers' Association; secretary, Fourth Street Company; director, Alaska Commercial Building; director, Market Street Company; director, Water Front Land Company, San Francisco, Cal.; director and Member, Finance Committee of Union Trust Company of San Francisco; director, Metropolitan Company, San Francisco.

Mr. Robert Dollar.—Born in Scotland 66 years ago and emigrated to America when 13 years old. Commenced to work in the lumber forests at the age of 14. At the age of 21 he had charge of a lumber-camp; at 30 was the manager of large lumber operations. At 35 he commenced lumbering in the State of Michigan on his own account. Twenty-two years ago he moved to San Francisco and engaged in lumbering and shipping; ten years ago he entered the Trans-Pacific trade with one steamer carrying lumber from America and picking up what freight could be gotten from China. At present three large steamers and one building and three chartered steamers are required to meet the requirements of the increasing trade; at present his Company have a 15-years contract to carry Iron Ore and Pig Iron from Hankow, China, to Irondale of Puget Sound, the maximum quantity on steamers are engaged in the American coastwise trade. The principal offices of the various companies he represents are in San Francisco; branch offices in Seattle, State of Washington, Shanghai, and Tientsin, China.

Mr. Richard M. Hotaling.—He entered the wholesale liquor business of his father and later became associated in the Hotaling Banking Co. of San Rafael, California, of which he is now president. He is vice-president of the Bay Counties Power Company, which first demonstrated the feasibility of long-distance transmission of electric power. He is the sole owner of the last big terminal facility for a transcontinental railroad on San Francisco Bay.

Seattle Chamber of Commerce.—Mr. Elbert F. Blaine is one of the most successful lawyers in the Pacific Northwest who served as one of the Honorary Commercial Commissioners to Japan in 1908, and chairman of the committee on arrangement for the entertainment of the Japanese Chamber of Commerce who visited the United States in 1909 and has done a great deal to bring about a better understanding between the countries on the Eastern and Western shores of the Pacific. He is a member of the Denny-Blaine Land Co. which has developed large tracts of rich fruit land in Eastern Washington.

TAOTAI SHEN TUN-HO, A MEMBER OF THE RECEPTION COMMITTEE AT SHANGHAI

Mr. William Pigott, of Seattle, is a director of the Seattle Steel Company, president of the Seattle Car Manufacturing Company, director of the Washington Trust Company, a trustee of the Alaska-Yukon-Pacific Exposition and a member of the School Board of Seattle.

Mr. Jacob Furth is one of the leading financiers of the Pacific Coast. He is chairman of the Board of Directors of the Seattle National Bank; president of the Seattle Electric Company, president of the California Land & Stock Company, director in a number of banks throughout the State of Washington, and is a trustee and former president of the Seattle Chamber of Commerce.

Tacoma Chamber of Commerce and Board f Trade.—Mr. William H. Dickson, Tacoma, president of the Washington State Association of County Commissioners, treasurer of the Washington State Historical Society, director on the Advisory Board of the Young Men's Christian Association, treasurer of the Tacoma Chamber of Commerce and Board of Trade, and ex-president of the Tacoma Boosters.

Mr. Charles H. Hyde is president and vice-president of the West Coast Grocery Company, vice-president of the Pacific National Bank, vice-president of the Tacoma Biscuit and Candy Company, trustee of the Tacoma Commercial Club, of the Union Club, of the Young Men's Christian Association, and a member of the Reception Committee of the Tacoma Chamber of Commerce.

Mr. L. R. Manning is head of the firm of Manning & Company, real estate and investment bankers; an active member of the Tacoma Chamber of Commerce and chairman of the committee on good roads; financial correspondent for the Northwestern Mutual Life Insurance Company; and president of the Tacoma Real Estate Exchange.

Spokane Chamber of Commerce.—Mr. C. Herbert Moore, ex-mayor of Spokane and president of the 1,500,000 Club, secretary and general manager of the Spokane Street Railway Company to 1891 when the street railway company sold their property to the Washington Water Power Company and Mr. Moore became interested in real estate.

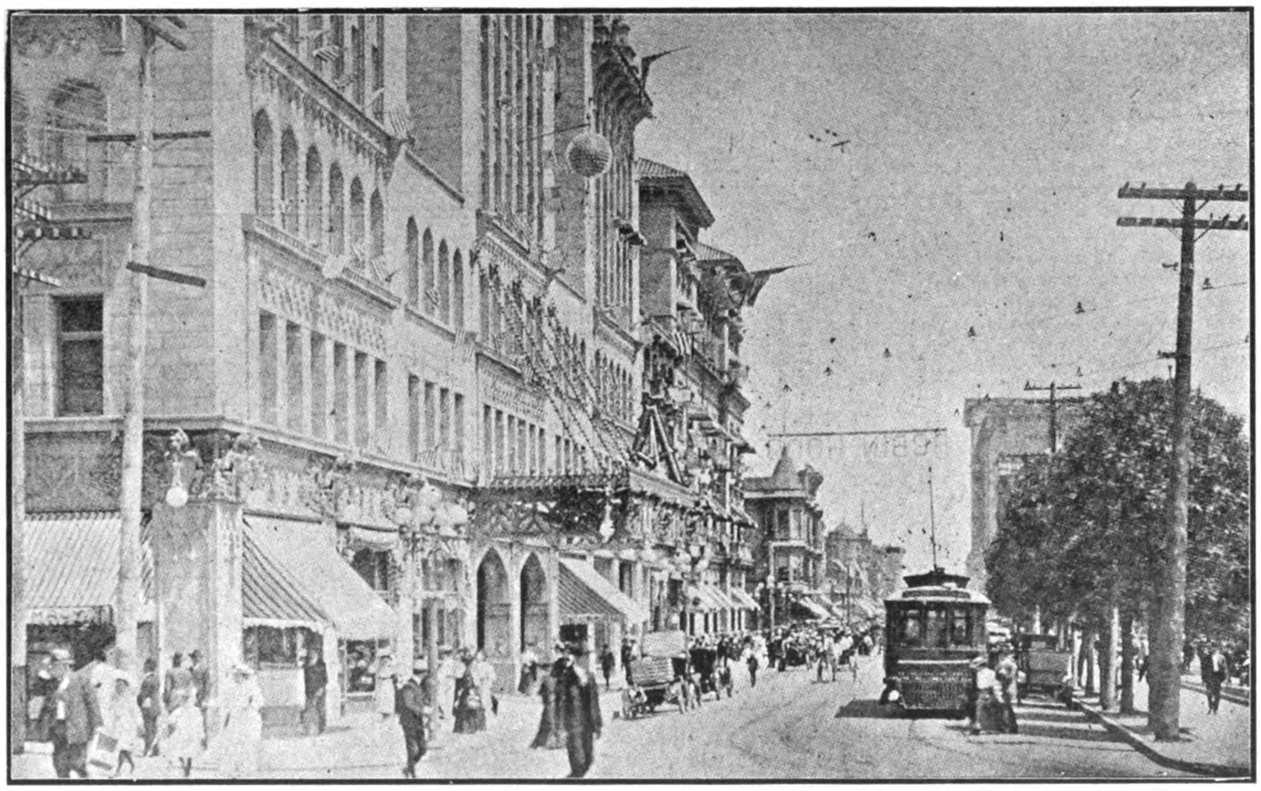
Mr. John Henry Shaw is president of the firm of Shaw and Borden Co., one of the largest stationery, book supply, printing and engraving houses of the Northwest.

Mr. Samuel R. Stern is a well known lawyer and legal representative of the Harriman railroad interests in Eastern Washington, was elected president of the Washington State Bar Association in 1900 and is a contributor to legal publications and leading literary magazines and newspapers.

The Portland Chamber of Commerce.—Mr. Carl Julius Butsch was born at Stuttgart in March 1880, educated at the German College there, and after a short educational and business experience in Hamburg, went to the far East, where he remained for five years with an exporting and importing house at Hongkong, Shanghai, Kobe and Yokohama. He then joined the China Import & Export Lumber Co., Ltd., and served in various capacities at Shanghai, a branch of their business on the Pacific Coast, with headquarters at Portland and Tacoma. He held that position until the 1st of July, 1910, when he entered the employ of the Pacific Export Lumber Co. of Portland, as their representative on the Asiatic Coast.

Mr. M. O. Clark is president of the Clark-Wilson Lumber Co., of Portland, Ore., president of the Columbia Timber Co., and of the Goble-Nehalem & Pacific Railway. He is Vice-President of the Oregon Surety & Casualty Co., and an active member and supporter of the Portland Chamber of Commerce and the Portland Commercial Club.

H. E. NA TUNG,
GRAND COUNCILLOR WHO ENTERTAINED THE COMMISSION AT PEKING



AUDITORIUM BUILDING AND STREET SCENE

THE SUGAR INDUSTRY OF THE ISLAND OF NEGROS

The Bureau of Science, Philippine Islands, has issued a valuable brochure presenting a thorough review of the sugar industry in the Island of Negros, by Mr. Herbert S. Walker, of the chemical laboratory, who made a personal investigation covering two seasons. In this work Mr. Walker carried with him a portable chemical laboratory and hand mill and established laboratories on each of the haciendas in the island. He was thus in a position to obtain information on the ground. The soil analyses and other work beyond the capacity of his portable equipment were done at the central laboratory, Manila, by Messrs. L. A. Salinger and R. R. Williams of the division of chemistry and Mr. Wallace E. Pratt of the division of mines.

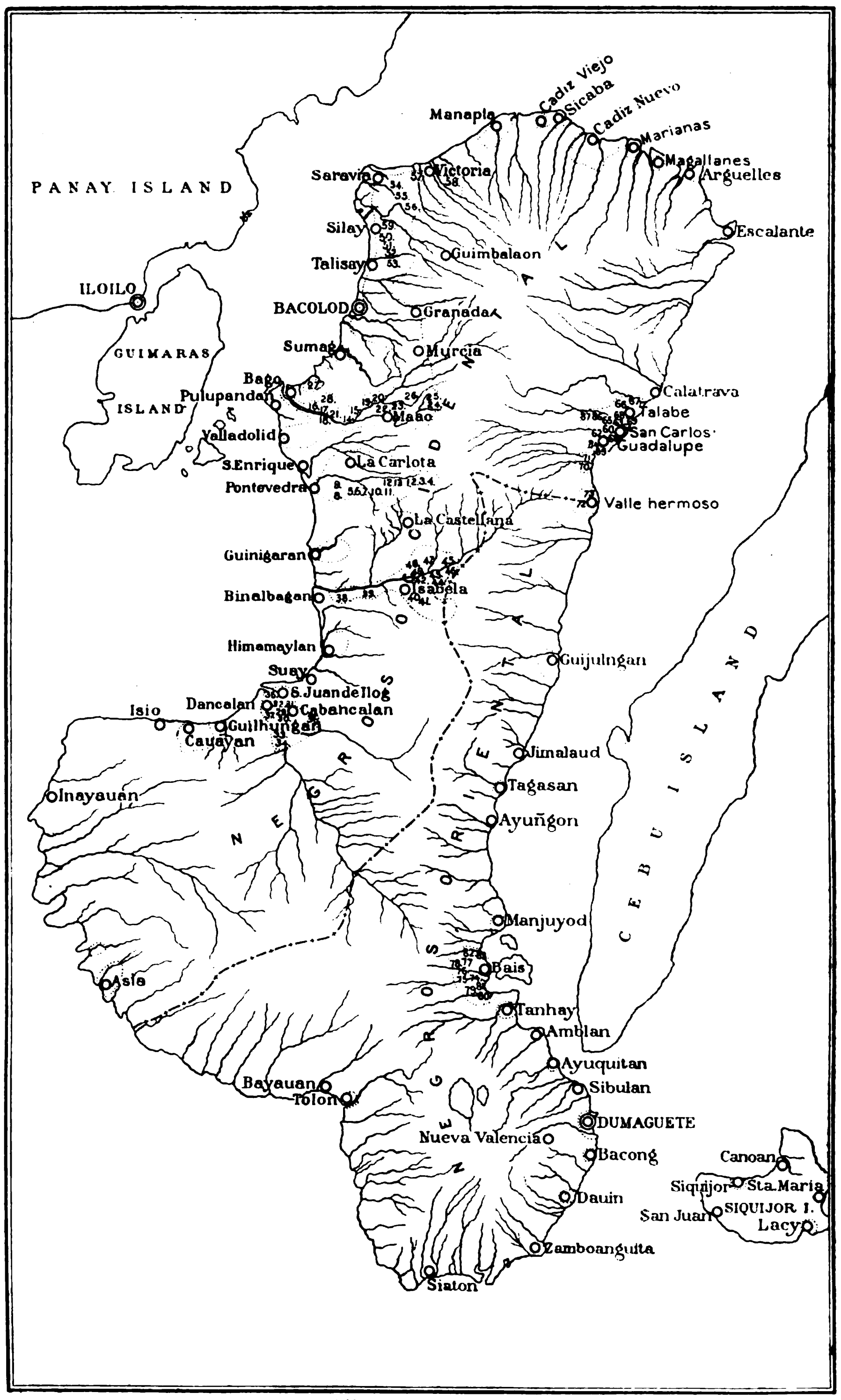
In his introduction Dr. Paul C. Freer, Director of the Bureau, states that the necessity of "an extended and thorough study of the sugar cane produced in the Philippines, the nature of the soils disclosed by chemical and physical examination, the area planted and the area available for sugar production," together with a study of the "existing methods of isolating the sugar and shipping it to the market in order to determine the benefits which might accrue from improved methods of grinding and evaporating," was early realized, but so extensive an undertaking was not practicable. Finally it was decided to concentrate effort in that direction on the Island of Negros, that region being the greatest producer for any given area in the islands.

The result is highly satisfactory, but the Director is anxious that a further investigation be made covering a study of desirable fertilizers on the spot and the introduction of other varieties of cane as substitutes in case of accident to the present types grown. He realizes, however, that in order to cover this ground the "chemical laboratory must give way to the experimental station."

The bulletin is illustrated with maps and views covering the practical side of the industry and an appendix covering "An Investigation to Discover if Diseases of the Sugar Cane Exist in Negros" by Elmer D. Merril, Botanist, and Chas. S. Banks, Entomologist, of the Bureau of Science, is included.

The result of Mr. Walker's work is a comprehensive presentation of the present status of the industry in Negros and suggestions based on conclusive data that will serve to guide the hacendero and the pioneer sugar farmer along lines that will best serve them in securing the maximum return for effort.

He first made an exhaustive enquiry into the prevailing conditions of agricultural practice in cane growing and sugar making during the milling seasons of 1908-09. During the season 1907-08 Negros produced 73,498 metric tons out of total Philippine production of 180,000 tons and in 1893, the largest crop in the sugar producing history of the



MAP OF THE ISLAND OF NEGROS

The Oakland Chamber of Commerce.—Mr. William H. Weilbye is a well known contractor, lumber dealer and contractor of Oakland, director of the Merchants' Exchange and director and vice-president of the Oakland, Chamber of Commerce.

Mr. A. E. Young is a prominent wholesale dealer and president of the Merchants' Exchange of Oakland.

Los Angeles Chamber of Commerce.—Mr. Willis Holyoake Booth is president, Associated Chambers of Commerce of the Pacific Coast; ex-president, Los Angeles Chamber of Commerce; vice-president, Equitable Savings Bank; secretary, Smith Booth-Usher Company (machinery merchants); secretary and general manager, Pacific Electric Heating Company (manufacturers electric heating appliances); treasurer and manager, Booth Investment Company (dealers in stocks and bonds.)

Mr. E. P. Bosbyshell is president of E. P. Bosbyshell Co., vice president United Wholesale Grocery Co., director Merchants' National Bank of Los Angeles, director and acting secretary of the Hall Construction Co. and director in the Los Angeles Chamber of Comerce.

Mr. E. S. Moulton is president First National Bank, Riverside; president Chamber of Commerce, Los Angeles; member of Board of Education; director of Stearns Lumber Co., Mendocino Co., Cal.; director Citrus Protective League of California; and director Riverside Savings Bank & Trust Co., Riverside.

Chamber of Commerce of San Diego County.—Mr. George Burnham is president of the Chamber of Commerce of San Diego County, and president of the firm of George Burnham & Co., incorporated.

Mr. William Franklin Knight is member of the Denver Real Estate and Stock Exchange; director, Interstate Dock & Lumber Co; ex-vice-president Pasadena Board of Trade, and member of the Board of Education of Pasadena.

Honolulu Chamber of Commerce.—Mr. Edward C. Brown is foreign manager of the Dearborn Drug & Chemical Works and is prominently associated with various commercial organizations, being a member of both the Merchants' Association and the Honolulu Chamber of Commerce and served as president of the Honolulu Commercial Club.

Mr. Fred L. Waldron is engaged in shipping and wholesale commission and has been president for two years past Honolulu Merchants' Association.

Mr. Charles K. Field was born in Vermont and graduated from Stanford University, California. He is associate editor of the Sunset Magazine, at San Francisco, California, and joined the party as American press representative.

islands, Negros provided 115,000 out of total 300,000 metric tons. And for the purpose of investigating soil conditions Negros provides them of "every degree of fertility from virgin forest lands and rich alluvial deposits to worn-out fields which have been cultivated for upwards of fifty years without fertilizing."

Natural Features.—The author places the area of Negros from 9,000 to 12,500 square kilometers, the greater part occupied by mountainous or hilly forest lands practically uncultivated. Three rivers, the Bago, Binalbagan and the Ilog, penetrate the important sugar districts and are accessible to flat bottomed sugar lorchas for from five to ten kilometers. The lack of large rivers and harbors in the island has made Iloilo the sugar port for Negros.

Climate.—The rainfall is variable. The reports of the meteorological station at La Carlota between 1889 and 1897 are taken as a basis of deduction and the average rainfall is placed 597 mm. in January; 556, February; 474, March; 870, April; 229, May; 304.8 June; 358.7, July; 378.6, August; 392.9, September; 350.9, October; 199.0, November; 127.3, December. The maximum temperature recorded at this station deduced from 1889-1898 runs very evenly the year round the month of September, 1891, showing the lowest at 33.5° C. and April 1891 the highest at 36.4° C. The monthly minimum ranged between 17.0°

PLOWING A FIELD BEFORE PLANTING

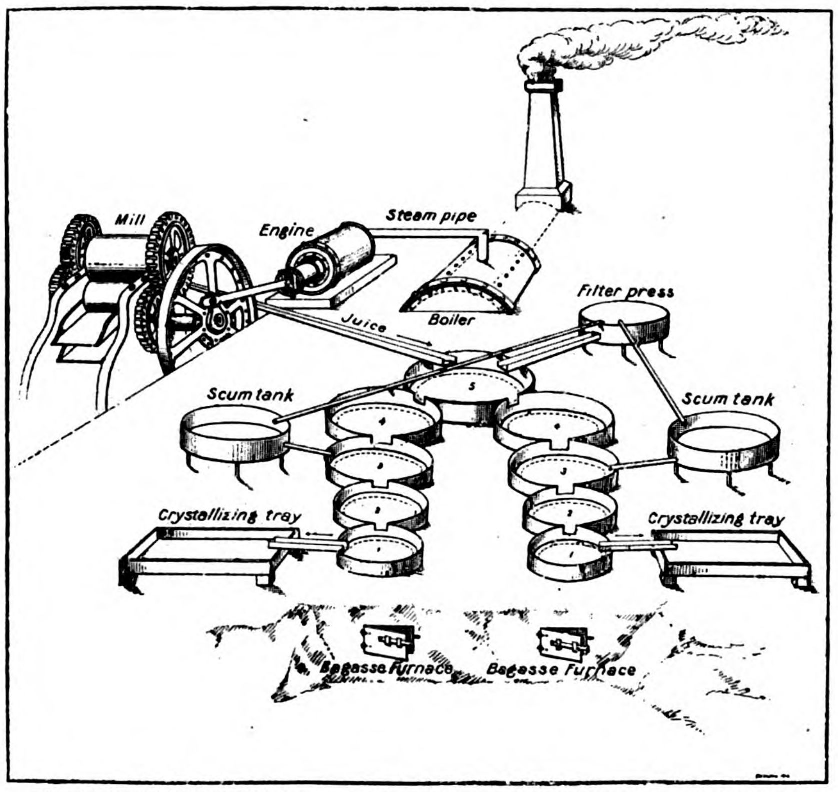


DIAGRAM OF THE CUSTOMARY ARRANGEMENT OF A NEGROS SUGAR HOUSE

C. in December 1892 to 20.8° C. in May, 1894. The highest monthly average of temperature covering the same period was 27.6° C. in April and May, and the lowest 25.6° C. in January.

At Bacolod for 1903-1908 the average rainfall by months show July to lead with 345.5 mm. and March with 153, the lowest. The average monthly temperature at this station gives May with 284° C., the highest, and January, February and August the lowest at 26.0° C.

A review of both stations indicates that the heavy rainfalls begin in May and continue during the balance of the year, the Bacolod district having more rain in January than the San Carlota.

The Sugar Belt.—Mr. Walker describes the sugar belt as extending from the town of Victorias in the North to Ilog River in the South, a distance along the west coast of approximately 130 kilometers with a width from the mountains to the sea of from five to thirty kilometers. Within this area there is much land not adapted for sugar growing, and for the purpose of his work, he divided the area into five districts, each of which produces more than 5,000 metric tons of sugar, and comprise the municipalities named as follows:

(1) Victorias, Saravia, Silay and Talisay. (2) Bago. (3) Pontevedra and La Carlota. (4) Binalbagan and Isabela. (5) Ilog and Cabancalan.

So much for the west coast. On the East there are two districts known as the San Carlos to the North and Bais in the South producing 5,000 tons each. Outside these seven large districts there are several municipalities that produce from 1,000 to 3,000 tons per annum, but they are isolated and, until better transportation facilities are provided, must be considered comparatively unimportant.

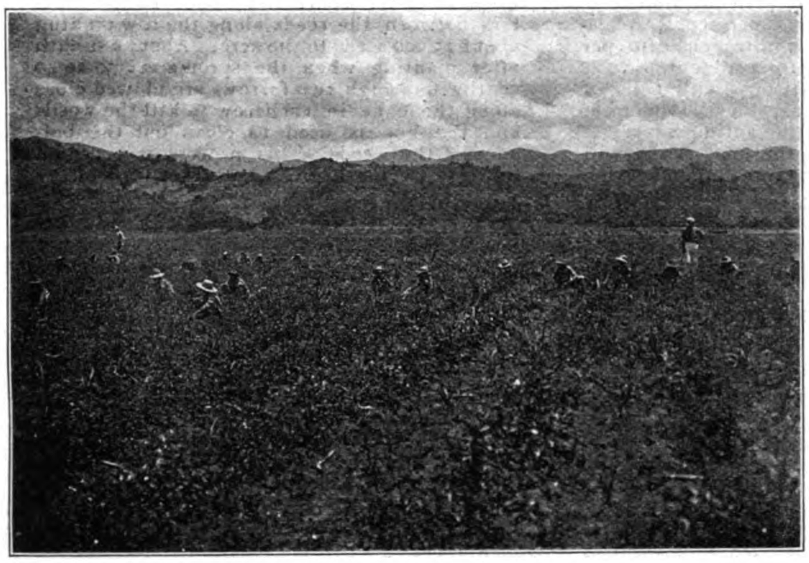
Sugar Statistics.—The Bureau of Internal Revenue provided a carefully prepared table on the extent of the industry for the year 1908 from which figures the author makes the following resume:

"Thus, in the whole island there was a total of 484 planters, who controlled in all 65,641 hectares of land adapted to sugar culture, of which 27,096 hectares were actually under cultivation and 38,545 for various reasons left unplanted. In addition there were 16,904 hectares of sugar land left unoccupied principally because of the lack of transportation facilities. During the year there were produced a total of 1,161,446 piculs or 73,462 metric tons sugar. Each planter, then, possessed on an average 135.6 hectares of cultivable sugar land, but planted only 56 hectares of it, allowing the remaining 79.6 hectares to lie idle. He produced from the 56 hectares planted 2,400 piculs, or 151.8 metric tons of sugar. Out of a total of 82,545 hectares of land certified to as being well adapted to the culture of the sugar cane 32.8 per cent was actually being cultivated, 46.7 per cent was owned by sugar growers but not planted, and 20.5 per cent was unoccupied, or at least unused because of lack of transportation facilities, animals, or capital. In considering these figures it should be borne in mind that they refer not to the total area of land comprised by the various municipalities, but to that portion of it, generally a small per cent, which is well known and certified to as being fit for cane growing.

"Dividing the total production of sugar by the number of hectares planted, we find that the average yield per hectare throughout Negros is 42.9 piculs, or 2.71 metric tons. This question of the average yield has long been a much-disputed point and one which it has been impossible hitherto to state with accuracy. Depending upon the locality which is visited, it is possible to form estimates which may vary several hundred per cent from the truth, in either direction. I have seen cane fields so sparsely sown and of such poor quality as to produce not more than 10 to 15 piculs (0.63 to 0.95 metric tons) to the hectare, while on the other hand there are well-authenticated cases in the richer districts where fields of several hectares in extent have averaged as high as 200 piculs, or 12.6

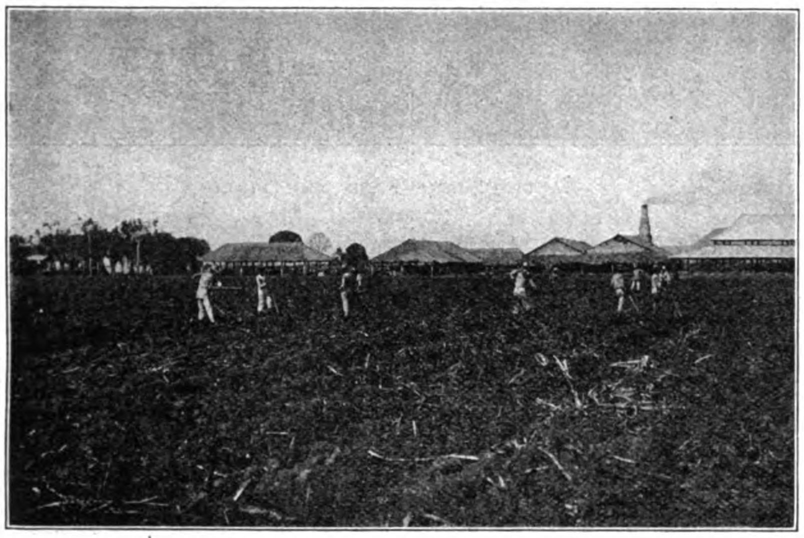
metric tons, to the hectare. The average yield for the island is greatly reduced by the comparatively large number of small growers who lack either the resources or the ability properly to care for their cane. I may state from personal observation that on a well-managed plantation—and there are a few such in Negros—the yield per hectare under normal conditions of land actually planted in cane will rarely fall below 60 piculs (3.8 metric tons), and frequently comes nearer 70 piculs (4 4 metric tons); this should hold true in the poorer as well as the richer sections, as the difference in quality of soil is in a measure made up for by the fact that cane grown in the former is as a rule richer in sucrose and is replanted every year on fresh soil, whereas in the latter it is allowed to ratoon until the yield becomes greatly diminished."

Labor Troubles—The difficulty in securing reliable labor during the milling season is

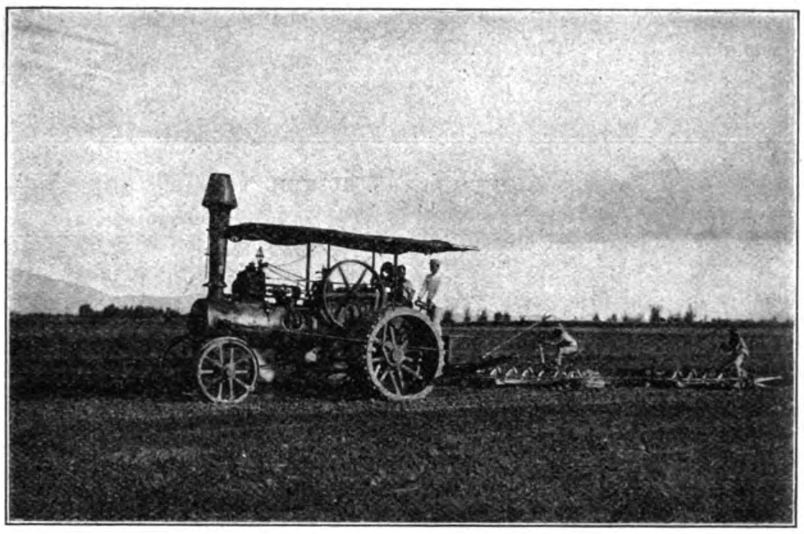


BOYS CLEARING OUT THE WEEDS

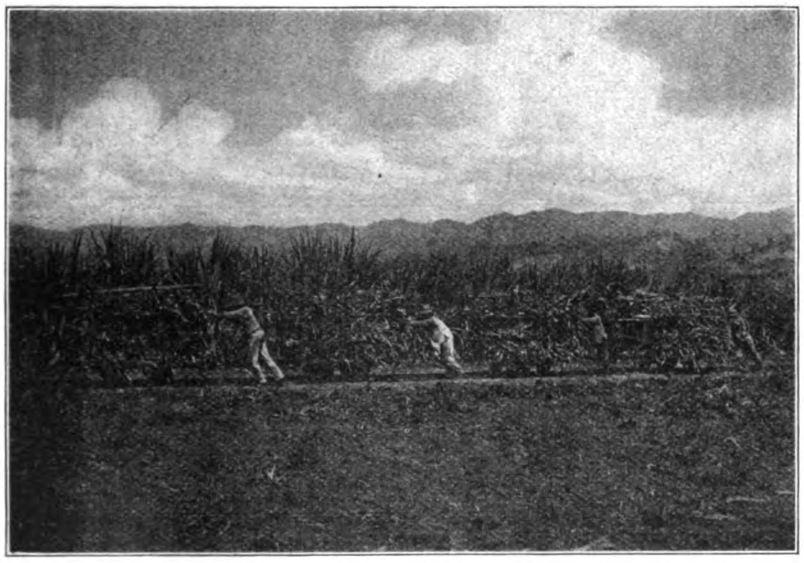
PLOWING BETWEEN THE ROWS



TAKING AWAY THE DIRT FROM AROUND THE ROOTS OF YOUNG RATOONS



STEAM PLOWING ENGINE DRAWING TWO DISC PLOWS



TRANSPORTING CANE IN A MAN-POWER TRAMWAY

CUTTING SEED, OR "PUNTOS," FROM CANE TOPS

the greatest obstacle in the way of the owner of small plantations which are the rule in Negros. The planter owns a small mill and he cannot afford to maintain a double force all the year round to have on hand for a few months. During this season labor is imported from Panay and Cebu through contractors. The average wage is 25 centavos with rations. The absence of a remedy for violation of contract works a hardship upon employers. There is no process for compelling a native to work and many instances occur where written agreements confirmed by substantial advances to contractors have been ignored. Echoes of the unreliability of labor in Spanish times indicate that American influence is not wholly responsible for present troubles. Echauz, liberally quoted on this subject, concludes:

"There is urgent need of a speedy and efficacious remedy for an evil which, if allowed to spread, may ruin the work of many years. Regulations should be made regarding hours of work, wages which must be paid, rations, voyages, time of stay in each hacienda, but, at the same time, let some guaranty be given to capital, some security to the planter."

The need of just such legislation as Echauz proposed is now receiving some attention at the hands of the government.

Soil Analysis—Mr. Walker devotes many pages to Soil Analysis covering in all special investigations in over 85 haciendas in the different districts so that the results are practically conclusive. Complete tables covering each district, and a general average is included together with comparative tables with other countries.

The average composition of surface soils in Negros follows:

"Surface soil: Fine earth, 97.39 per cent; potash, 0.20 per cent; soda, 0.18 per cent; lime, 1.66 per cent; magnesia, 0.98 per cent; phosphoric acid, 0.15 per cent; nitrogen, 0.14 per cent; "volatile matter," 9.31 per cent.

"Subsoil: Fine earth, 96.10 per cent; potash, 0.17 per cent; soda, 0 17 per cent; lime, 1.79 per cent; magnesia, 0 99 per cent; phosphoric acid, 0.12 per cent; nitrogen, 0.10 per cent; volatile matter, 9.19 per cent.

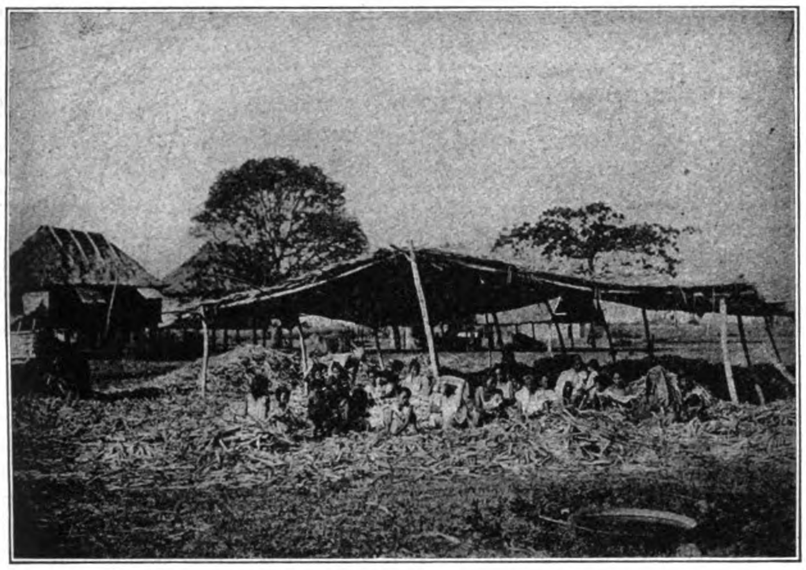
Concluding his comparisons with soils of Hawaii, Egypt, Louisiana, Java, Demerara, Berbice and Mauritius, the author says:

"Comparing all these soil analyses, it will be seen that although not preeminently rich in most constituents, the soil of Negros may rightfully be classed as among the better of the sugar lands of the world, and, given the proper care in cultivation, should be able to yield eventually as much sugar in proportion to the area of ground planted as any other country depending for its supply of water on its natural rainfall. Practical experience in cane culture tends to establish the fact that production depends more upon careful and intelligent cultivation than upon any inherent richness in plant food possessed by the soil itself, granted, of course, as a starting point a land not utterly deficient in these necessary elements of nutrition. An example of the truth of this statement is the relative productivity of different parts of the Hawaiian Islands. In comparing different sugar-producing countries, Hawaii is almost invariably placed in the lead without a rival, because of 'the enormous fertility of her soil,' both fertility and average yield being often grossly exaggerated."

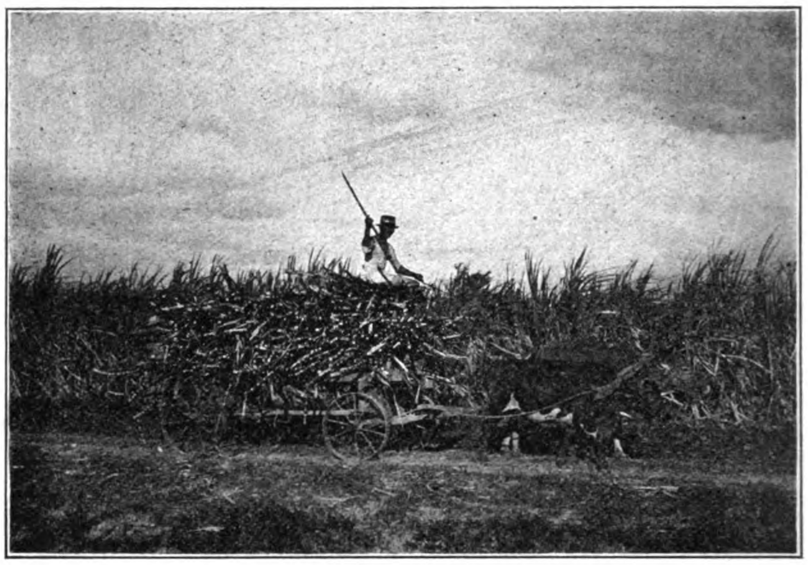
Cultivation of the Cane—The native wooden plow drawn by the carabao prevails in cultivating the ground although the American plow is slowly coming into use. When the seed is ready they are planted in rows running a meter apart and about 40 centimeters between the seeds along the row making about 25,000 seeds to the acre. About a month after planting when the sprouts are 30 to 40 centimeters high two furrows are plowed close along the cane in each row to kill the weeds and the hoe is used to clean out the balance of the weeds. This process is repeated until the rains begin when three furrows are plowed between each row throwing the dirt up around the roots of the cane and making a shallow trench between the rows. Later four furrows are plowed and the dirt is packed higher around the cane and the trench made relatively deeper.

A large proportion of the cane land in Negros is not replanted every year but allowed to ratoon and, according to Mr. Walker, two to eight crops are taken off without replanting and "theoretically cane planted in some of these alluvial soils, which are flooded and fertilized each year by silt brought down from the mountains by the overflow of a river, might go in ratooning forever. Practically, the period between plantings is limited strictly to financial considerations."

(Continued to page 210.)



WOMEN AND CHILDREN HUSKING PUNTAS



HAULING CANE FROM THE FIELD

LOADING CANE ON WAGONS

SUGAR MILL IN ACTION

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.

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CONTENTS

	Page
Visit of the Honorary American Commissioners to China	191
Sugar Industry of Negros	203
Chinese Financial Situation	207
Benefits of the Visit of the American Commissioners to China	208
Passing of the King of Siam	208
China's Ancient Commerce with the Americas	208
Shanghai and Her Rubber Problem	208
Democracy's Triumph at Peking	209
Contracting News	212
Philippine Mining News	213
Far Eastern Railway News	214
Far Eastern Engineering, Construction, Commercial and Financial News	215
Far Eastern Share Quotations	218
Index to Advertisers	224

THE CHINESE FINANCIAL SITUATION

The storm center of the financial situation continues to remain in the vicinity of Shanghai although the barometer rose materially towards the latter part of October when the announcement was made by H. E. Liu In Yik, the new Taotai of Shanghai, that the Ta Ching Bank had been directed to advance Tls. 1,000,000 to relieve the situation and Viceroy Chang Jen Tsun of the Liangkiang provinces announced that he had received permission from the Throne to authorize the Chamber of Commerce to arrange a loan of Tls. 2,000,000 with the Hongkong & Shanghai Banking Corporation. Besides these sources of relief it was reported that the Ynchuanpu had arranged for a loan of Tls. 1,200,000 from the Yokohama Specie Bank to be made available through the Bank of Communication at Shanghai. The result of these activities gave temporary relief and confidence was restored somewhat by the news that the recommendation of Viceroy Chang that a foreign loan of Tls. 5,000,000 be arranged would be favorably considered by the Ministry of Finance. On October 27, a report from Peking was to the effect that a loan of Tls. 3,000,000 had been authorized. Since then the news that a loan of $50,000,000 had been arranged in New York and another later report that an international loan for a similar amount had been authorized, (probably the same loan), the proceeds to be used in straightening out China's finances, is encouraging, and promises an adjustment before the New Year settlement.

The acute situation of last month was precipitated by the sudden dismissal of the Taotai and an order directing the native banks to pay back the official funds deposited with them to the Taotai's order.

On October 9th the foreign banks refused to honor bills of exchange issued by 21 native banks and the Yuanfeng Jun Bank suspended payment. Its Peking branch and fifteen agencies followed suit. The effect of these suspensions was felt in Nanking and Hanchow. The strain on the native banks and commercial houses was most severe. In some quarters the statement was made that if the dismissal of the Taotai had been delayed, the crisis might have been averted but few are disposed to endorse this opinion. With the interest shown by the Peking and local authorities, and the movement for better banking regulations which has been inaugurated, the ultimate outcome is expected to place the finances of Shanghai on a more substantial basis and minimize the danger from future speculative craze.

The new Taotai issued a proclamation shortly after his arrival in which he directed attention to the laws prohibiting the buying for selling forward. Reviewing the history of the rubber bubble in which these laws were violated by the large contracts for rubber stock entered into for speculation based on the fluctuations of the market, followed by disaster on settlement day and the endangering of the finances of the settlement, he warned the public that any one indulging in this abnormal practice would be severely dealt with. He also called upon the officials of the Mixed Court, the City Magistrate, and the Chamber of Commerce to use every endeavor to enforce respect for these regulations.

The reform of the native banks was then taken up by the Viceroy and the Taotai and the following list of regulations was referred to the Chamber of Commerce and the Bankers' Guild for their consideration:

1.—That the Shanghai Taotai, the Chamber of Commerce and the Bankers' Guild be ordered to investigate the capital of the various banks and the property of their proprietors; those which are found to be substantial to be assisted. Those which are insolvent to be liquidated and those which falsely declare themselves to be insolvent to be severely dealt with.

2.—The managers of the banks shall not carry on other business or use the capital of their banks for such a purpose.

3.—The proprietors of the banks shall report to the Shanghai Taotai the guarantors of their managers.

4.—That the banks must have a certain capital before they are allowed to do business and their operations are to be limited in proportion to their capital. The amounts of the capital of the banks are to be recorded in the Taotai's yamen and published for general information.

5.—The proprietors of the banks must also report to the authorities what property they have.

6.—Branches of a bank shall not be called by other names but may have so and so 'Kee' added to the name of the head office for the purpose of distinction.

7.—Gambling in exchange and shares is prohibited by law and any one found guilty of it shall be severely dealt with.

8.—That the duties of the managers of the banks shall be fixed and the punishments for their offenses shall be decided.

9.—Before a new bank can be registered and allowed to carry on business the Chamber of Commerce and the Bankers' Guild shall appoint a substantial existing bank to borrow from it a sum of money in proportion to its capital.

10.—Exchange of orders shall be prohibited.

11.—Bankers shall mutually assist one another.

12.—In view of the extensive dealings between the banks and the factories and their inter-dependence, the Shanghai Taotai shall in conjunction with the Chamber of Commerce and the representatives of the Guilds inquire into the capital of the industrial concerns, the property of their proprietors and the number of their employees. If they borrow money out of proportion to their capital or to carry other business the proprietors shall be punished.

The Committee of the Bankers' Guild to which the regulations were referred submitted the following report and recommendation:

"When we received your communication we at once realized that His Excellency the Viceroy was sparing no efforts to rid the banking system of its evils and we immediately convened a meeting of our members to consider the proposed regulations. We were unanimously of the opinion that the chief object of the rules of the Bankers' Guild has always been the careful handling of moneys on the part of the banks and the protection of credit. The rules as originally drawn were based on the customs and usages of the trade and have been observed for scores of years. In late years, owing to the increase in expenditure and the consequent difficulty in doing business, the rules have been amended from time to time so as to make them more stringent. This year the Chang Yuan and other banks recklessly issued orders without having regard to their ability to meet them and thereby upset the whole market. This was due to Chang Yue and Pao Kang conspiring with the managers of the banks in question and was absolutely in contravention of the rules of the Bankers' Guild. The result was a financial panic. Now that His Excellency the Viceroy has come to Shanghai to assist the market and has, with that object in view, drawn up the regulations, we ought to obey his orders. But the settlement at the end of the 9th moon is drawing nigh and the merchants are much alarmed and that being so if we were to investigate the affairs of the banks now we would arouse greater fears in the minds of the people. Therefore we think that the investigation should be postponed till after the China New Year when the market will be quieter. The pressing matter is to meet the immediate necessities of the situation and we venture to request Your Honour to request His Excellency the Viceroy on our behalf to raise funds for circulation in the market so as to ease the minds of the people and save the situation."

When the Viceroy returned to Nanking on October 28 he made the following announcement:

"I came to Shanghai this time to assist the market and have decided, among other things, that the merchants should borrow a foreign

loan of two million taels against properties of their own as a temporary relief of the tightness of money. On the 19th of the current moon I memorialized the Throne on the subject and on the 20th I received an Imperial Edict to the effect that Chang Ren-tsing had memorialized by telegram that there was no money in the Shanghai market, and that he had, in consultation with the British Consul, decided that the Merchants should, on the security of their goods and property, borrow a foreign loan, the agreement for which was to be sealed with the official seal of the Shanghai Taotai as guarantee, and that the matter had been referred to the Board of Finance for consideration and report. On the 23rd day I received a further Edict to the effect that the Board of Finance had reported favourably on my proposal, which accordingly was sanctioned.

"As to the securities which the Yuen Feng Jun and other banks have deposited with the late Taotai Tsai Nai-huang against advances out of the pubic funds, we understand that the Viceroy is going to memorialize the Throne that they should be taken over to be realized when the market is better."

The announcement that the deficit in the Chinese budget amounted to Tls. 37,000,000 and the general well founded impression that China's finances were in a bad way added materially to the general depression. Confidence in Shanghai, however, has been in a measure restored by the activity of the Viceroy of the Liangkiang and the interest reported in Peking in providing ways and means to relieve the situation.

Later the report that a $50,000,000 loan had been arranged, the details of which are not at hand, presumably to straighten out the national finances, is sure to have an added optimistic effect.

There can be no doubt that China will weather the storm and out of her experience should come greater effort to establish a standard currency and inaugurate a comprehensive code of banking regulations.

BENEFITS OF THE VISIT OF AMERICAN COMMISSIONERS TO CHINA

One marked feature of the visit of Pacific Coast businessmen to China was the complete exclusion from the many addresses, that featured the triumphant tour, of any reference that might be given political significance. Indeed, the absence of any political purpose was emphasized at the audience accorded the visitors by the Prince Regent and, in order that no possible excuse might be given for such interpretation, it might be noted that Manchuria, the only section in which America has shown any interest politically, was not included in the commission's itinerary. The foreign press as a whole remained free from prejudicial comment and although a feeble attempt was made to place a construction on the visit and have it appear inimical to Japan's interests in China, it fell flat, popular as such a theory usually appears in commenting on the relations between Nippon and the United States, and China and the United States.

The most important feature of the tour, in our opinion, having a bearing on the future of the commercial relations between the two countries, was the candid discussion of the operation of the American exclusion laws, while the party was in Canton. We believe the comprehensive, frank, and sympathetic address delivered by Mr. Robert Dollar, reproduced in another column, accomplished much towards a better understanding between the two peoples on this subject. He emphasized more effectually than any publicist, previously, the necessity of cooperation in the honest observance of the treaty on both sides of the ocean. The recent thorough investigation in San Francisco referred to was an evidence of good faith on the part of America in this respect and there is reason to believe that the Chinese officials and merchants of South China realize more fully than ever the necessity of guarding against any attempt on the part of unscrupulous officials to violate the spirit of treaty and especially so since it is the innocent merchant who suffers. And, on the other hand, the American government has become active in an endeavor to prevent abuses, so that if this mutual spirit prevails, future conflict on this question is made very improbable.

Not the least feature of the desirable results of this visit will be the spreading of more intelligent information respecting China's potentialities, with increased respect in America for the Chinese people and their institutions. No doubt Chinese Commissioners will soon return this visit and will have an opportunity of getting more closely in touch with American institutions with a similar spread of first hand information in China. The outcome of all this will be better reciprocal trade relations and increased intercommercial activity between the two nations.

The political attitude of America toward China was firmly established during the days of Secretary Hay so that all who run may read. And it is not unlikely that America's consistant friendship since those days made possible the remarkable reception accorded the American businessmen in every section of the Empire visited. So that instead of the tour of the commercial representatives having for its purpose the advancement of any political program, the satisfactory interpolitical relationship established for many years might well be said to be largely responsible for the very cordial reception accorded this representative body of America's citizens.

THE PASSING OF THE KING OF SIAM

The unexpected news announcing the death of His Majesty, King Chrilalongkarn of Siam, was received October 26, and messages of condolence have been pouring in from every part of the world expressive of sympathy to the royal relatives of this most progressive sovereign.

Paramindr Maha Chulalongkoarn, the late King, was the son of King Paramindr Maha Monkut, his predecessor, and was born in Bangkok on September 20, 1853. He succeeded to the throne on the death of his father October 1, 1868, making his reign of 42 years duration.

His successor is Prince Chao Fa Maha Vajiravudh who was proclaimed Crown Prince in 1895 upon the death of his brother. King Maha Vajiravudh is 29 years of age, has travelled widely and received a thorough western education. He may be depended upon to carry out the progressive policy of his father.

The late King received a western education and upon his accession proceeded to institute reforms in the administration of affairs. In 1874 he issued a decree granting a constitution and abolishing slavery in his dominions and it might be said that he lived to see this decree effective. Postal service and telegraphic communication were inaugurated in 1885. The late King personally turned the first turf in the beginning of construction of the first railway in Siam in 1891 and a system of state railways was begun the following year. He lived to see a comprehensive system operating and construction under way which will link Siam with other sections of Malaysia.

Almost the last official announcement made by the late King was on the occasion of the celebration of his 47th anniversary, September 20, when he declared that the government policy in future would be to use every means to discourage the use of opium in the kingdom.

CHINA'S ANCIENT COMMERCE WITH THE AMERICAS

In view of the recent visit of the Honorary Commissioners from the Pacific slope to China, with the object of establishing better trade relations, reference to the extension of China's commerce across the Pacific almost 2200 years ago is of special interest at this time, and we are indebted to the Rev. Alexander Darley, author of "China's Three Great Failures," written for the *Cablenews-American* of Manila, through whose courtesy we reproduce a few interesting extracts. "China's Three Great Failures" is written from the viewpoint of a bible student, based on authoritative data, and has reference to the failures of China to embrace opportunities to extend her commerce, to further her influence by colonization and to accept Christianity. Of her neglect with regard to the extension of commerce and colonization Mr. Darley writes:

"*In commerce.*—She has ever been, as now, a merchant, and her first chance came when the Americas were thrown open to her, June 10, 217 B. C.; for on that day Captain Hee Li struck the California Coast near the Monterey of the present. He came to do it in this way:—He was owner of a small junk engaged in the coasting trade, and in a February typhoon was driven out to sea. A *yong si bug*, very much similar to our cockroach, got into the compass and, struggling to get free, finally fixed the needle so that it pointed South instead of North, and died fastening it in that direction. Hee Li was surprised to see China's shores recede, but conservatively stuck to his compass and went east for three months. Once, on the way, Hi, one of the sailors, noted that the sun always arose ahead instead of behind the ship and so told Hee Li, but the captain promptly threw him overboard. Had not his fathers used the compass since the days of the earliest dynasty, and wasn't it too late to doubt? When they landed between the 36 and 37 degrees of North latitude, the bug in the compass was discovered. But they had lost a sailor and found a continent.

"Hee Li and his crew of ten explored the coast three months, 50 miles south and 150 north. He entered the Golden Gate and called the Bay of San Francisco, Hong Tsi, or Great Bay. He started back in September, getting home near the end of the year. He greatly praised California's climate, and trade was kept up for 100 years, junks visiting the new land every few months.

"Hee Li died in 197 B. C. Lately it has been discovered that the roots of the language of the Digger Indians are much like those of the Chinese, showing that settlers followed the sailors.

"This discovery occurred in China's most virile and enterprising days, in the reign of Chin Wang, called the Chinese Napoleon because he consolidated China's numerous petty kingdoms into one. So she failed of her wondrous opportunity by seeking home consolidation instead of foreign commerce. What was left to her on our coast fell to Digger Indians' grade. But history ever repeats itself. Where is our American commerce? Lost in home consolidation, just the same as it was lost to China. And because we have put out our hand across the seas, a great anti-imperial cry has gone up. The Sons of Japheth must expand or die!

"*In colonization she failed.*—Witness the above Digger Indian outcome, and Dr. W. F. White of New York says there is a strong resemblance between the Alaskan Indians and the Chinese.

"In fact, China has had two or three trials at the Americas. My old friend, Judge Crosby of Del Norte, Colo., told me that the Indians about Vancouver resemble Chinese and decapitate, instead of scalp, their enemies. Dr. Plougeon, before the New York Geographical Society, said that there was a small village on the Northern coast of Peru called Eten, whose language the other peoples of the neighborhood could not understand, but the lately imported coolies from China could. Further south, idols resembling those worshipped in China have been dug up.

"The Chinese inscriptions on these idols are in antique characters showing a very early migration, possibly as old or older than Hee Li's time. One little village in all South America left to tell the tale of ancient enterprise! Alaska, California and Peru:—the Americas lost, because the people's look was backward to themselves instead of forward—the way God ever points."

It would appear from Mr. Darley's conclusions that America and China have in common suffered from lost opportunities for trade expansion due to the same complaint and that their respective Hee Lis have heretofore been without adequate recognition and but negligently supported.

SHANGHAI AND HER RUBBER PROBLEM

While the native banks are having their rubber bubble aftermath, the speculators who failed to get from under before the deceptive bubble burst, as yet, fail to see a way out of their dilemma. Many suggestions have been offered, few of them practical, and none of general acceptance. The trend of opinion

toward organized effort looking to relief is growing, but initiative has been lacking.

Among the latest proposals is that of Mr. Edward S. Little of Shanghai set forth in a letter to the press in which he included an invitation to the shareholders of any Shanghai rubber company to participate in a public meeting to be held November 9 for the purpose of considering a resolution which Mr. Little proposed to submit "asking the shareholders to appoint a committee of from nine to fifteen representative men, who shall consider sundry propositions with a view, if possible, of evolving a practical scheme for the protection of the shareholders' interests."

Among the subjects Mr. Little proposed for the consideration of this committee was the forming of an association and the future methods of management of Shanghai rubber companies. Mr. Little further suggested that all rubber properties involved should be revalued by experts and the companies amalgamated with a view to economic management.

A correspondent of the *N. C. D. News* is opposed to spending money for expert reports and urges that by this time the Boards of Directors of the different companies should have all the necessary information and it ought to be made available to the shareholders for their information.

"Practical" also believes that with effective economical direction the majority of the Shanghai companies could be made to pay.

This last proposal is considered editorially by the *North China Daily News*, but that journal goes further and urges that the moral phase of the recent boom be gone into first and restitution made where profits accrued through misrepresentation and contracts entered into based on fraudulent data should be cancelled. That journal says:

"Against possible criticism in opposition to this scheme that such a step would be without precedent or derogatory to the directors or in some other way prejudicial to the interests of the company it has to be pointed out that the situation is exceptional and that Shanghai shareholders can hardly be expected to be oversensitive in regard to anyone's feelings in this connexion. In our opinion, however, something more remains to be done after revaluation of the rubber estates, before Shanghai can hope to recover from the crisis that has affected both its finances and its morals. No section of the community can pride itself on exemption from the immorality of the boom. The public clamoured for shares; directors lent their names for the asking, trusting to vendors' or promoters' assurances; vendors and promoters, if of Shanghai, trusted to the statements of someone else or considered that details were unimportant with rubber over eleven shillings a pound and the public ready to take any shares that were offered them. But the difference between these three sections is that, where a company's estate proves not to be what it was stated to be, the vendors and promoters alone have derived any benefit. The public may have been crazy for shares, but their madness had thus much method in it that they demanded those shares only from those whom they regarded as trustworthy business men. If these latter have been deceived, they may plead that it is their misfortune and not their fault only so long as they have not benefited through the deception. There can be no justification for retaining profits made over a false deal. A vendor disposes of an estate on the understanding that it is of such and such a value in virtue of its area and the number of trees, of a stipulated growth, that it contains. If a few months later it can be proved that the estate fails entirely to correspond with the description of it given by the vendor, shareholders have not received what they agreed to buy and are not bound to pay the sum covenanted. Where the vendors are of Shanghai it may be supposed that they will voluntarily surrender the profit to which they are not entitled, and we presume that even in other cases the directors of companies placed in such a position will attempt to recover part of the purchase price. With companies that have been misled in the manner indicated and have parted with vendor shares a solution of the difficulty might be found, if these shares are still unsold, by their destruction in whole or in part. Finally there remains the class of company that may be unable to point to actual grave discrepancies between the prospectus and more recently ascertained facts, but finds that the prospects held out originally prove altogether misleading. In such cases it is obvious that the property cannot hope to be a success while it is paying its agents or secretaries an annual sum equivalent perhaps to the possible output of rubber from the estate three years hence. Here again is an instance where directors must see to it that the interests of shareholders are safeguarded. In this way can directors, who accepted their posts only too lightly, shoulder, though late in the day, some of their responsibilities. Then with economies effected in these directions Shanghai may have some chance of proving the truth of 'Practical's' optimistic belief that 'under competent and economical management most if not all' of the companies may in time give a fair return to shareholders."

There can be no doubt but that the *N. C. D. News* has struck at the root of the matter. Whether its counsel will be appreciated is another matter. What seems to be the greatest drawback to intelligent adjustment is lack of confidence and co-operation. The loss of capital and credit is a serious misfortune to the individual but loss of confidence and lack of co-operation involving a whole community is disastrous.

DR. HINCKLEY, RECENTLY APPOINTED DISTRICT ATTORNEY OF THE U. S. COURT FOR CHINA. HE IS A GRADUATE OF COLUMBIA WITH DEGREE PH. D. AND THE AUTHOR OF A BROCHURE ON "AMERICAN CONSULAR JURISPRUDENCE IN THE ORIENT"

DEMOCRACY'S TRIUMPH AT PEKING

The eyes of the world are on the Tzucheng Yuan in its initial session and it is most gratifying that with rare exception the tone of the comments of the foreign press is sympathetic. The deliberations of this body have been marked by great decorum and while the element of control lies in the appointees of the throne, and it was expected that they would represent reactionary influence, their almost unanimous approval of the recommendation for the early convening of the parliament, demonstrated that the leaven of democracy is permeating the most aristocratic circles in Peking.

The edict of the late Empress Dowager provided for a parliament in 1915 thus giving sufficient time for the gradual development of a constitutional form of government. The Prince Regent in carrying out the reform movement followed the spirit of the edict, but with the remarkable adaptability shown by the provincial assemblies, the reform element became the more confident and urged an earlier date than that arranged for the convening of this popular body. This confidence rapidly spread with the result that from every section of the empire and from Chinese in foreign countries petitions for an immediate parliament came pouring in.

The appointment of half the members of the senate from among the imperial connections and officials by the Prince Regent was presumed to provide a restraining influence upon too insistent democracy, but we find that even the Imperial appointees have become imbued with the progressive spirit to the extent that when a resolution was presented recommending the convening of a popular parliament at an early date, only a corporal's guard were found to oppose it.

The recommendation went to the Prince Regent on October 27 and there was for a time prospect that he would decide to call a parliament for 1911. Tsai Tse, President of the Ministry of Finance, upon introducing the budget for the consideration of the Yuan, declared that the only remedy for the deplorable condition of the nation's finances would be found in a parliament which he hoped would be convened at an early date.

From every section of the empire congratulations poured in on the members of the Yuan and petitions followed in support of their recommendation.

On November 4 a cablegram from Peking announced that the Prince Regent had issued an edict declaring that a parliament would be convened in 1913. In the more radical press the Prince Regent's action is interpreted as evidence of active reactionary influence, but that it is a victory for the reform element is generally recognized. It also indicates recognition of the growing strength of the latter element in every walk of Chinese life and since the first attempt at securing an early parliament resulted in reducing the time by two years why not a further shortening of the time by keeping up the good work?

THE SUGAR INDUSTRY OF MOROS

(Continued from page 206.)

The results from plant cane and ratoons show that one hectare of plant cane on good land produces 100 piculs or 6.22 metric tons; first ratoons 80 piculs or 5.06 tons; second ratoons, 70 piculs or 4.43 tons; third ratoons 60 piculs or 3.80 tons; fourth ratoons 50 piculs or 3.16 tons. It is obvious that after the fourth year the ratoon crop would prove unremunerative.

The present facilities for transportation and milling are antiquated. Hand loading and the carabao cart prevail although on the larger plantations tramways on which the cars are propelled by hand, drawn by carabaos, are in use, or where possible, a gravity tramway is installed. One hacienda uses a traction engine.

The mills are divided into three classes, viz: those driven by steam, those driven by water power, and those using carabao for motive power. The last named are being superseded by the steam and the water power has so far been utilized only by small haciendas in the interior where small streams provide power.

The steam mills are practically all of English or Scotch origin, of the ordinary 3-roller type, driven by direct-gear connection with a single-cylinder engine running at from 40 to 80 pounds steam pressure, and rated at a nominal horsepower of from 6 to 16, the average throughout the island being about 8 to 10. It is calculated roughly that each horsepower possessed by an engine is capable of grinding sufficient cane in an ordinary working day of twelve to fourteen hours to make 10 piculs (632.5 kilos) of sugar, so that the average mill of Negros may be said to have a daily capacity of from 80 to 100 piculs (5.1 to 6.3 metric tons) of sugar, or approximately 50 to 60 tons of cane.

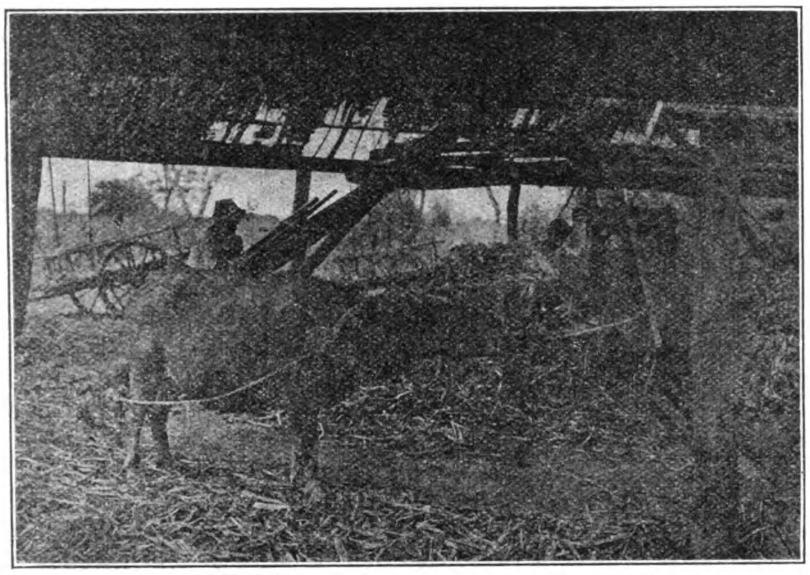
The bagasse is used for fuel after it is dried in the sun and care is taken to maintain a large supply in anticipation of continued rains.

In the extraction of the juice, Mr. Walker concludes that the "average planter of Negros loses in the bagasse about 25% of the total sugar present in the cane. In extreme cases, with very soft and tender cane, this may fall as low as 20%, and when grinding very fibrous cane it may rise as high as 33%. The extraction of juice on the weight of the cane may range from 50 to 70% but averages about 64.5%. Therefore from 100 tons of cane there are obtained 64.5 tons of juice. Compared with the Barbadoes, where equal primitive methods are employed, the Negros cane is of superior milling quality.

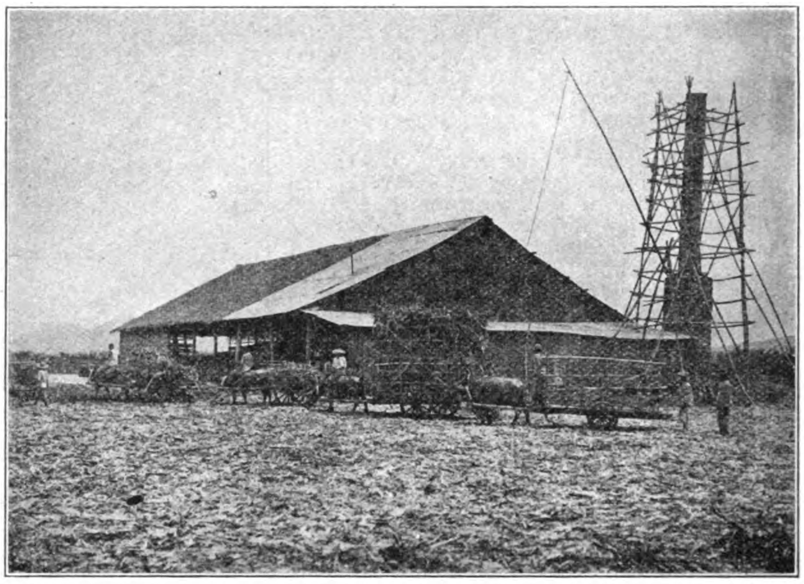
In the manufacture of sugar from the juice, sugar boiling plants in Negros consist essentially of a "battery of hemispherical iron vessels or 'cauas' usually five or six in series in which all the operations of tempering, clarifying, concentrating the juice, and boiling the resultant syrup to a concrete are performed."

A detailed description of the processes in Negros and results follow and a final résumé in the form of a table covering 30 tests gives the following average showing the composition of the mill juice and the quality of the sugar produced by a number of mills in Negros:

Mill juice: Brix-1971; sucrose 17.20; quotient of purity, 87.03; reducing sugar, 1.20. Sugar Made: polarization 82.0; reducing sugar, 8.9. Reducing sugar per 100 sucrose: In juice, 7.4; in sugar, 11.4.

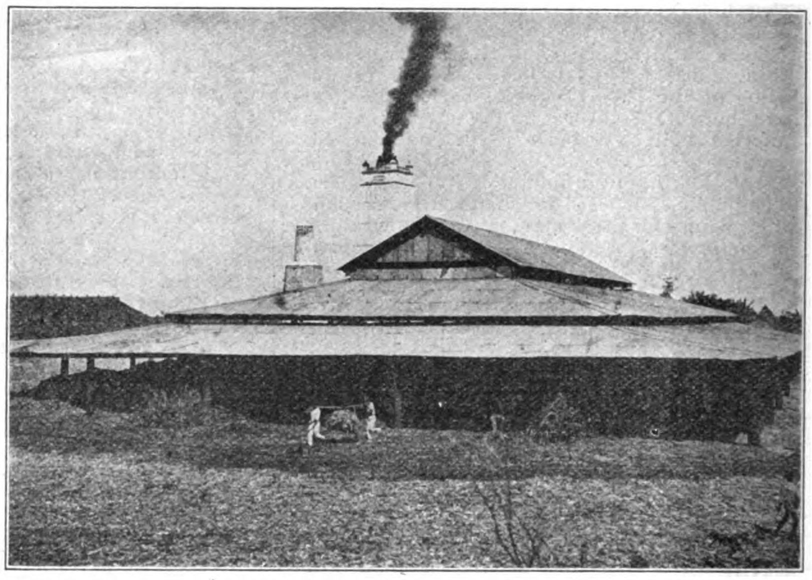


CARABAO MILL



CAMARIN AND CARABAO CARTS

INTERIOR OF THE CAMARIN



SIDE VIEW OF CAMARIN

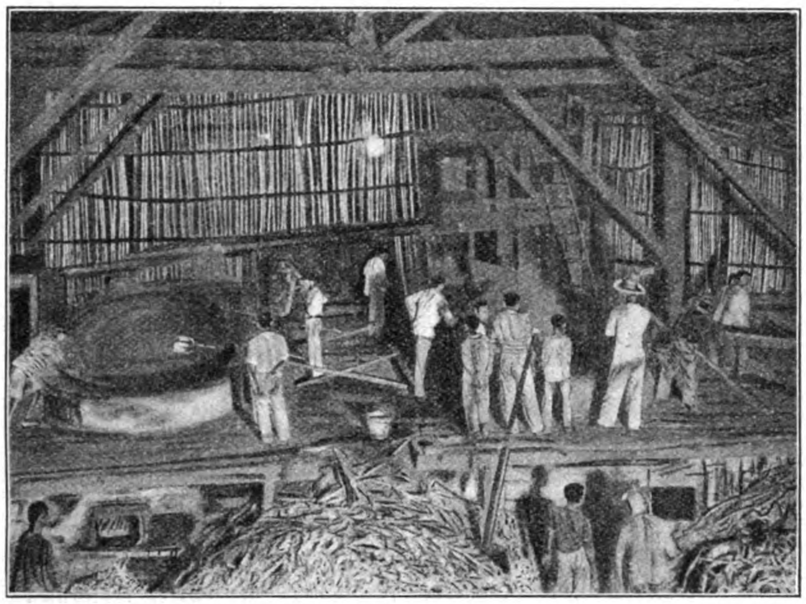
At this juncture the sincerity of the Prince Regent in his desire to further consistant reform is more generally recognized and, while he believes in making haste slowly, he has succeeded in responding gracefully to a popular expression at a most critical period of the Empire's history. And it might be said that every trial of strength between the reformers and the reactionaries is a splendid test of capacity for popular government. The dignity and decorum that marked the conduct of the members of the Yuan during the recent proceedings furnish friends of China with the most desirable evidence on that score. That alone was a real and lasting victory for the progressive Chinese.

The results of these tests agree closely with the Iloilo records of sugar bought there, 82.6 polarization.

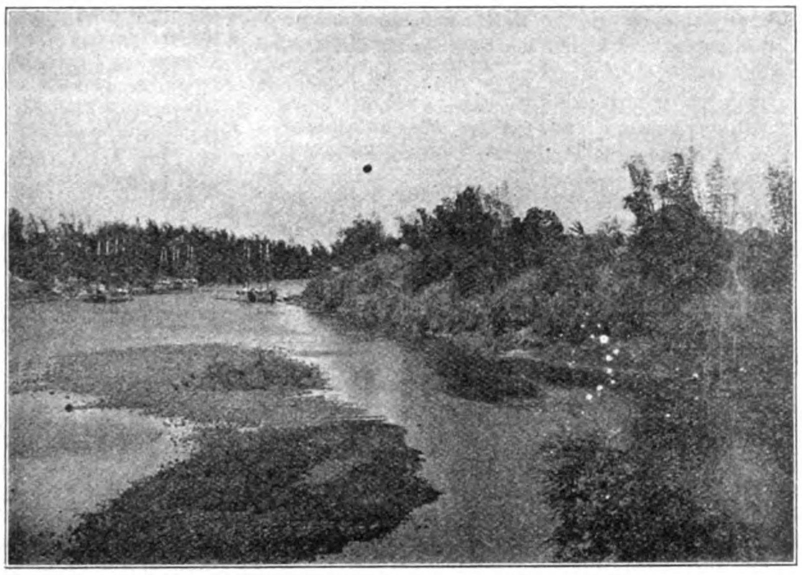
Mr. Walker proceeds to show the increased returns that might accrue the planter by the exercise of greater care and the introduction of improved methods not only in cultivation but in mills and sugar making plants.

"In the New York market the price quoted for Iloilo 'Assorted' is practically constant at 1 cent gold per pound less than that of 96° centrifugal. Therefore it would be logical to presume that at least the same difference in value would hold good in Iloilo, or, since a central factory of any size would be in a position to ship its sugar directly to New York at the same cost as if shipped from Iloilo, the value of 96° centrifugal sugar at the factory in Negros may safely be assumed to be, under normal market conditions, 1 cent gold per pound, or 2.689 pesos per picul, or 44.09 pesos per metric ton greater than that of 'Assorted' at Iloilo at any given time. With Iloilo prices 96° centrifugal would be worth at the factory in Negros 9.914 pesos per picul, or 156.75 pesos per metric ton (3.56 cents gold per avoirdupois pound).

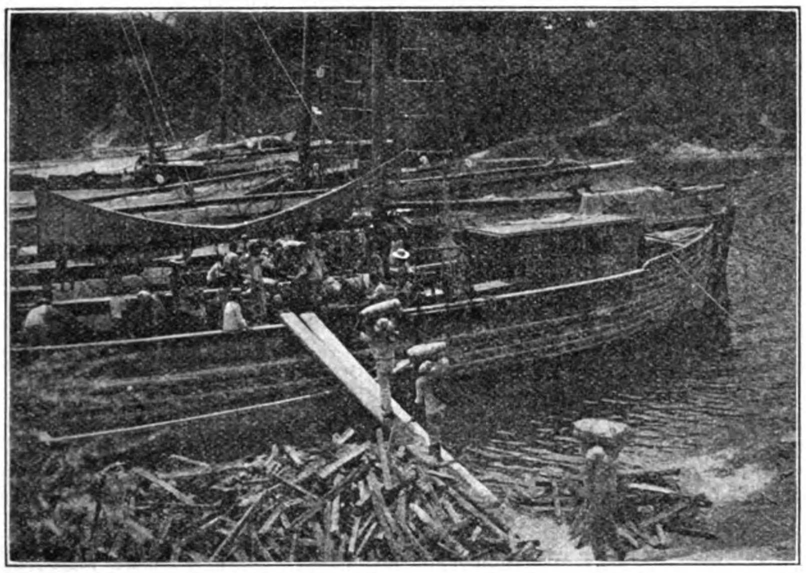
. . . .



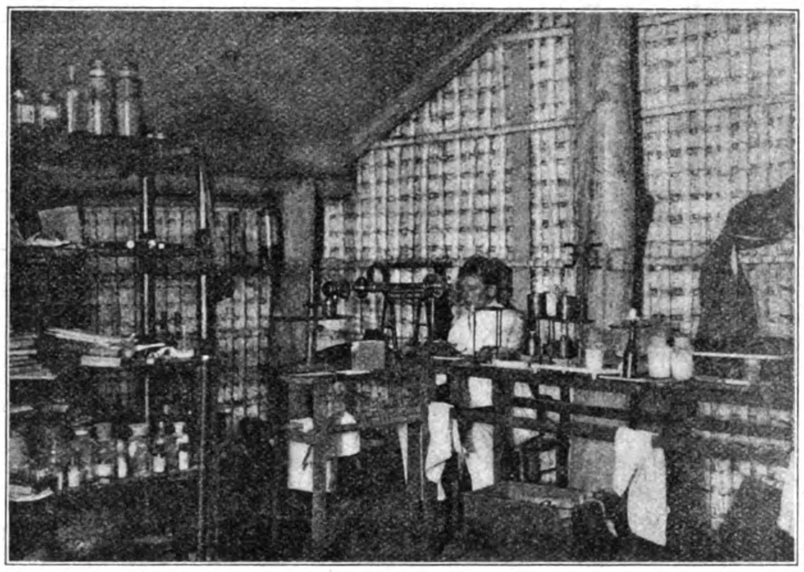
SUGAR BOILING IN NEGROS



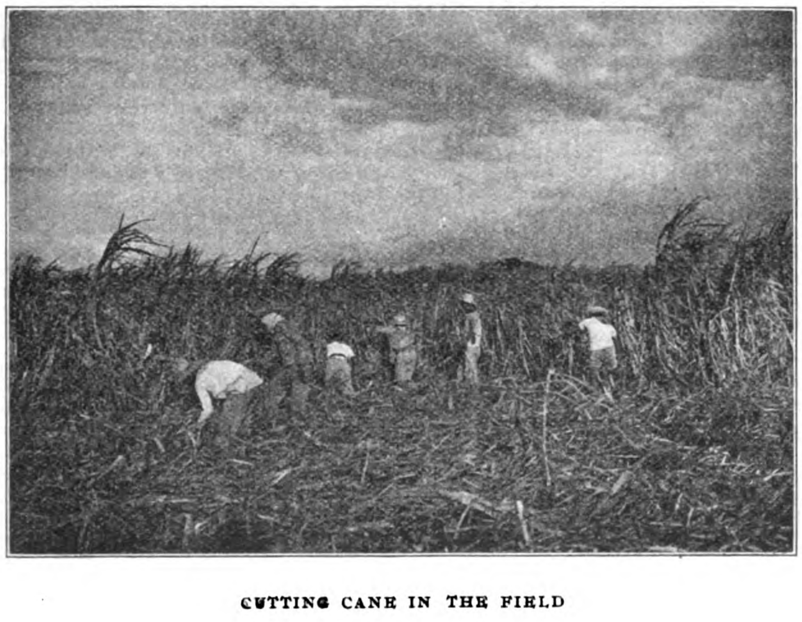
BAGO RIVER AND SUGAR LORCHAS



LOADING SUGAR ON LORCHAS



TEMPORARY EXPERIMENTAL LABORATORY



CUTTING CANE IN THE FIELD

"Negros sugar is practically all sold in Iloilo, where it is classified as 'Superior' Nos. 1, 2, and 3, "Wet," and "Current," of polarization minima of 87°, 85°, 80°, 76,° and 70°, respectively. The difference in market price has heretofore been arbitrarily fixed at 25 centavos between grades of 'Superior.' The two lower grades have usually been shipped to China, and bear no fixed price relation to the 'Superior' sugars."

The ruling prices in Iloilo in the above grades (since advanced) were: Superior No. 1, ₱7.50 a picul or ₱118.59 a metric ton; No. 2, ₱7.25, ₱114.63; No. 3, ₱7.00, ₱110.68; assorted, ₱7.12, ₱112 66; Wet, ₱5.62, ₱88.96, and current ₱4.00, ₱63.24.

The average cost of producing sugar by the present process in Negros is ₱4 15 a picul or ₱65.61 a metric ton, so it will be seen by the above prices that "current" is produced at a loss of ₱2.37 a ton while if modern methods were employed, and 96° sugar produced, a profit of ₱3.14 a ton would be realized. Relative increase of profit would also be secured on the other grades.

Concluding his summary with respect to the future of the Negros sugar industry which applies generally to other sugar sections in the islands as well, Mr. Walker says:

CONTRACTING NEWS

CONTRACTS AWARDED—Municipality of Shanghai.—Electric Cables and Fuse Boxes:—

11 miles Hard Drawn Bare Copper Cable, manufactured by the Felten and Guilleaume Lahmeyerwerke in accordance with the specification, Messrs. Siemssen & Co., at £75 5s. per ton copper weight, say (£946 5s. 3d.), delivery within 13-14 weeks after receipt of order. The remaining tenders are as follows:

	£	s.	d.
Inniss & Riddle	924	16	10
Jardine, Matheson & Co. Ld.	950	0	0
Takata & Co.	960	2	7
British Insulated Cables Co.	972	5	0
Calder Marshall & Co.	985	10	0
Brighten, Malcolm & Co	985	10	9
Garrels, Borner & Co.	986	11	8
Siemens Schuckertwerke	991	0	0
Arnhold, Karberg & Co.	994	0	0
Melchers & Co.	999	16	0
Calder Marshall & Co.	1006	0	0
do.	1018	10	0
Johnson and Phillips	1027	0	0
Shanghai Machine Co.	1031	6	8
Shewan, Tomes & Co	1063	7	2
Inniss & Riddle	1080	0	0
Collins & Co.	1093	10	0
Rose, Down & Thompson	1125	19	5
W. T. Henley's Telegraph Cable Works	1134	11	6
Cleveland Engineering Co	1169	16	8
Craig & Co.	1230	12	0
P. Muller	1452	0	0

1,000 single-pole, 50 Ampere, 200 Volt, House Service Fuse-boxes, manufactured by the W. T. Henley's Telegraph Cable Works in accordance with the specification, Mr. David W. Bell, at 4s. 10d. per set (say £120 16s. 8d.), delivery within 14 weeks from date of receiving order. An identical tender has been received from the W. T. Henley's Telegraph Cable Works direct, but acceptance of the local tender is considered preferable.

The remaining tenders are as follows:—

	£.	s.	d.
W. Lucy & Co. (f, o. b.)	89	11	8
Johnson & Phillips	101	0	0
W. Lucy & Co. (f. o. b.)	106	5	0
Collins & Co	107	10	0
Takata & Co	108	7	10
Jardine, Matheson & Co. Ld	119	0	0
Cleveland Engineering Co	120	0	0
Rose, Down & Thompson	134	7	6
Shewan, Tomes & Co	140	0	0
Inniss & Riddle	165	0	0
Rose, Down & Thompson	165	2	1
Brighten, Malcolm & Co	170	0	0
do.	170	0	0
Inniss & Riddle	172	0	0
Brighten, Malcolm & Co	196	17	6
British Insulated Cable Co	204	0	0
Cleveland Engineering Co.	210	0	0
Inniss & Riddle	256	0	0
Calder Marshall & Co	394	5	0
do.	458	15	0
Siemens Schuckertwerke	505	0	0
Siemssen & Co	510	0	0
Garrels, Borner & Co	517	10	0
Arnhold, Karberg & Co	790	0	0
Melchers & Co	1031	17	0

Seward Road Bridge.—Tenders received for the erection and completion of the reinforced concrete substructnre of the Seward Road Bridge across the Hongkew Creek, that of Yao Sing-kee, Tls. 4,059.06 was authorized for acceptance. The remaining tenderers are as follows:—

Yue Chang-tai	Tls.	5,321
Silby and Evans.		5,400
Fong Ling-kee		5,854
Chang Foo-kee		9,150
Zee Zung-tai		9,222
Sing Woo-kee		12,250

Installation of fire service in the Gordon Road Depot and extension of Hot Water Heating apparatus in the new greenhouse at the Reserve Garden awarded the Shanghai Waterworks Co., Ld., Tls. 820 and Tls. 540 respectively. Erection of new kitchen, etc., at Louza Police Station, Zee Shun Shing, Tls. 1,200, were awarded the contracts.

BIDS OPENED.—Bureau of Public Works, Philippine Islands.—Furniture and Equipment, Philippine General Hospital.—S. C. Choy & Co., ₱10,870, in 140 days, and Manila Saw Mill Company ₱5,931 in 180 days.

BIDS OPENED.—Bureau of Public Works.—Cebu Waterworks.—J. E. Ainsworth bid on A. B. C. as follows: A, construction of dam and spillway, ₱148,060. B, construction of reservoir, ₱63,850; and C, construction of distributing system, ₱99,651, or a total of ₱311,561.

The Manila Construction Company bid as follows: A. ₱142,650, B. ₱76,450, C. ₱106,095 or a total of ₱325,195.

Coleman & Goodman: A. ₱133,010, B. ₱78,150, C. ₱108,142 or a total of ₱318,302. Their offer called for an award on all three or none.

The Atlantic Gulf & Pacific Co. bid on A. B. C. and D., the last named representing the delivery and purchase of the material for the distributing system and main pipe line. They bid on A. ₱144,385, B. ₱73,457.50, C. ₱90,247.90, or a total of ₱308,090.40, on D, they bid ₱155,537.50 which makes a grand total on the work and supplies of ₱463,627.90. The A. G. & P. Co. bid on A. B. C. and D, collectively, and on A. B. C. separately. They specified that they would accept D. separately with a 5% increase.

Robert M. Loper bid A. ₱121,380, B. ₱82,410, C. ₱111,372, or a total of ₱315,162, D. ₱170,058.14 or a grand total of ₱486,058.14. Mr. Loper's bid called for A. B. C. collectively or one.

A. Moll & Co. bid on supplying materials only. Their bid was for D. ₱159,866.11, duty paid. The "duty paid" is not clear, but it is presumed to mean that they will pay the duty on the goods that they submit.

Messrs. Peabody & Co. bid on D. only, ₱154,427.36 for English material and ₱155,805.25 for American. The English bid omitted 96 post fire hydrants. They also specified that should the work be awarded to the Manila Construction Company they would reduce the price ₱1.75 per ton on both bids.

Messrs. Findlay & Co., bidding for Robert McClarien & Co., bid ₱157,481.86 on D. providing all pipe and specials could be delivered in one lot instead of two, and that they be allowed to furnish class A fire hydrants.

The Atlantic Gulf & Pacific Co. are the lowest bidders for all the work and are also the lowest bidders for A, B, and C, but they are not the lowest bidders on D, if taken separately. All the bids have been taken under advisement by the Director of Public Works.

PROPOSALS INVITED.—Tientsin-Pukow Railway (Southern Section). Third Class Passenger Cars. Sealed tenders are invited for the supply to this Railway of twelve (12) third class passenger cars. Specification and Blue Prints of same may be obtained from the Railway Purchasing Agent, Taotai Y. C. Tong, Imperial Chinese Telegraphs, The Bund, Shanghai, on the payment of a fee of Dollars Twenty-five ($25.00) which amount will be returned, upon application to the Agent, on receipt of a bona-fide tender.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking, and should be clearly marked on the outside "Tender for Twelve Third Class Passenger Cars, Indent No. 104." They will be opened at the Head Office, Nanking, at 10 a. m., 1st December, 1910. No tenders submitted after the hour mentioned will be considered.

Tenderers are requested to carefully note the following conditions: All the Cars must be delivered "ex ship's slings" on the Railway Wharf at Pukow at Contractor's risk and cost, before end of June, 1911. A fine of Five Shillings per car per day will be deducted from the contract price as liquidated damages for each day car or any part of it remains undelivered after the date mentioned. Customs Duty and Wharfage Dues at Pukow for Railway account, all other charges for Contractor's account.

Quotations must be in Sterling and the names of proposed makers must be stated. Payment will be made Twenty (20) days after complete acceptance of each shipment, in Shanghai or London at Contractor's option.

CONSTABULARY CLOTHING SUPPLIES.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., December 17, 1910, and then opened in the presence of attending bidders for furnishing the Bureau of Constabulary the following articles:

6,000 khaki hats.
24,000 cotton undershirts.
7,500 spiral-cut khaki woolen puttees for enlisted men.
50,000 yards of khaki cloth.

Bids must be accompanied by samples.

Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

"A few possibilities for improvement are suggested, the chief among them being the substitution of modern methods of manufacture. It is shown that the average planter could by selling his cane to a central factory earn a somewhat larger profit from it than by manufacturing it into sugar himself under the present method, the difference in profit being much more marked with inferior than with very rich and pure cane. The greatest benefit to the planter under the modern system would result from his being thereby rendered independent of manufacturing details and largely of weather conditions, so that he would be enabled to operate on a much smaller working capital and at the same time secure better results from his land.

"The annual limits of sugar production in Negros during the next fifteen years may be estimated at about 220,000 metric tons of low-grade sugar under the present system of manufacture or 500,000 metric tons of 96° centrifugal sugar if a complete change should be made to modern methods of manufacture. The larger production under the modern system would be due not so much to a greatly increased yield as to the stimulus to the industry in general and consequent improvement in cultural methods which would follow in its train."

The illustrations accompanying this article are published by courtesy of the Bureau of Science.

PHILIPPINE MINING NEWS

CONSOLIDATION IN BENGUET.—A recent meeting of shareholders of the Benguet Consolidated, the Bua Mining Company and the Camote-Clayton group resulted in a tentative proposal to combine for the purpose of interesting Hongkong capital in the installation of a plant to handle the output of the three properties. It is proposed to turn over to the Hongkong Company all the machinery and equipment now owned by three companies. Then a satisfactory site would be selected and these plants assembled with sufficient new machinery added to provide a plant large enough to handle all the ore that can be taken out. Nels Peterson, representing the Consolidated, Mr. Reavis, the Camote-Clayton, and Mr. Powers, the Bua, have been named to go over the ground and prepare plans and a preliminary estimate. It is expected if this arrangement goes through other properties in that vicinity will enter into an arrangement to supply the custom's mill with ore. The Consolidated saved 94 ounces last month.

General Manager Bridgeman of the Philippines Exploration Company returned from New York early this month. He leaves for Paracale to inspect the San Mauricio and other properties of the company. Mr. Kane, who accompanied him to the United States, remained there to superintend the construction of a dredge for the Guamas company.

THE COLORADO MINING CO.—This company, which controls rich lode properties in Masbate, expects to commence active milling operations the latter part of March, 1911. The plant will comprise a battery of twenty stamps with complete cyanide equipment. The capacity will be about 100 tons daily. The buildings have all been erected and the last consignment of machinery was shipped to Masbate early this month. For the last eight years continuous development work has been under way and perhaps, without exception, no mining property in the islands has been more effectually uncovered and the ore bodies more clearly defined.

As a result, once the mill is started there will be no delay for need of plenty of ore to keep the plant employed. The gold values are of a very satisfactory average. This mine has been developed entirely by American capital.

PARACALE DREDGING NEWS.—The operations of the Stanley dredge have been suspended owing primarily to a broken shaft and later to some differences between the mine owners and the New Zealand people over the contract.

The Philippines Dredger operating on the Malaguit River returned 72 ounces last month and is working most satisfactorily.

The Paracale Gold Dredger continues successful operations and the Huntington Mill for handling the rich quartz brought up by the buckets will begin operations by the first of the year. The output of the dredger for October was 400 ounces.

THE TUMBAGA MINING CO.—A meeting of the shareholders of this company was held in Manila October 24 at which it was decided

SALE OF HULL.—Sealed proposals, in duplicate, will be received at the Office of the Chief Quartermaster, Department of Mindanao, Zamboanga, P. I., until 3:00 p. m. December 7th, 1910, and then opened in the presence of attending bidders for the Hull of the Quartermaster Launch "Atlanta." Proposals must be accompanied by Certified Check, payable to the order of the Chief Quartermaster, Department of Mindanao, in the sum of ten (10%) per cent of the amount of bid. Information furnished upon application at this office. F. G. Hodgson, Assistant Quartermaster General, U. S. Army.

SCHOOL SUPPLIES.—Sealed proposals in triplicate will be received at this office up to 11 a. m. November 25, 1910, when they will be opened in the presence of the attending bidders, for furnishing and delivering school supplies.

Proper forms and specifications may be had on application to this office.

BUREAU OF PHILIPPINE CONSTABULARY.—Shoes.—Sealed proposa's in triplicate will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., February 17, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary 10,000 pairs of shoes.

Bids must be accompanied by samples.

Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

PUTTEES.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, until ten a. m., January 11, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary.

1,000 pairs of puttees, woolen, spiral, for officers.

Bids must be accompanied by samples.

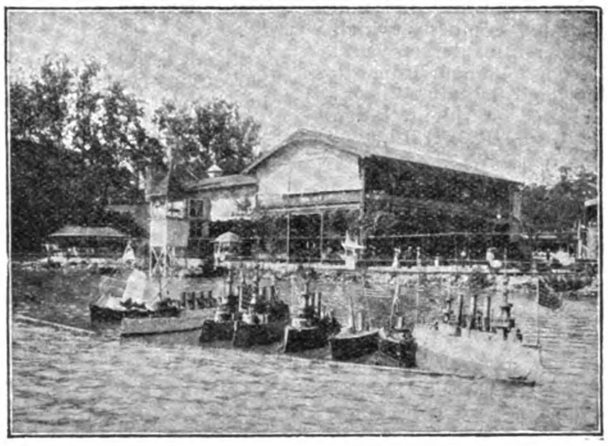
Time for delivery to be stated on proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building.

As a guarantee of good faith each proposal will be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

PUBLIC WORKS DEPARTMENT, SYDNEY, NEW SOUTH WALES.—Coal loading plant capable of delivering into ships' holds about 1,000 tons of coal per hour at each side of a new jetty to be erected at Port Kemble, South Coast, N. S. W. Contractors' Room, Public Works Department, Sydney; and office of the Agent General of New South Wales, London. Bids opened January 9th, 1911.

SHANGHAI MUNICIPALITY.—Annual supply of Petroleum Lubricating Oil, Motor Spirit, etc. Tenders to be submitted not later than November 30 and should be addressed to W. E. Levenson Esq., Secretary, endorsed "Tenders for Oil."



A Novel Fleet of Miniature Motor Driven Battleships

The above is not a fleet of monster death dealing battleships as might be supposed at first glance, but a small part of a efleet of 26 miniature battleships that react famous naval battles at an amusement park in Cincinnati, Ohio. The fleet consists of men of war, torpedo boats, destroyers and all types of war vessels. They are from 9 to 15 feet in length, constructed entirely of steel and completely fitted out in all respects to their particular class, especially having a full equipment of guns.

These boats were built in Hamburg, Germany, and for several years were exhibited in the principal cities of Europe. The shows were so successful that they were continued for two months in Hamburg. During the European Tour a trained man was carried to operate each boat. Motive power was furnished by means of electric motors.

Mr. J. Weaver, president of the Ludlow Lagoon Amusement Co., of Cincinnati, learned of these boats and immediately foresaw an opportunity to place a show on the road. He purchased the outfit and had them shipped to Cincinnati, where they have been showing for sometime. After purchasing the fleet Mr. Weaver decided that gasoline motors would furnish more satisfactory motive power than the electric motors with which they were powered. He conferred with several engineers, one of whom was Lewis E. Bedinger, District representative at Cincinnati for the Ferro Machine & Foundry Co. After figuring over the proposition Mr. Bedinger guaranted Mr. Weaver that the 3 HP 1910 Ferro would run the boats at the required speed and give most satisfactory service. A test was made and the first show that was put on proved such a great success that Mr. Weaver ordered Mr. Bedinger to equip the balance of the fleet with 3 HP Ferro Specials. They are being installed rapidly and the majority are now in operation.

Among the famous naval battles reacted are the Monitor and The Merrimac, The Battle of the Harbor of Manila, The Battle of Port Arthur, and several others.

Mr. Weaver is booking dates for his novel exhibition and he expects soon to start upon an extensive tour of this country.

FAR EASTERN RAILWAY NEWS

JAPANESE RAILWAYS.—The total receipts for the five months ended August 31 amounted to Yen 37,271,383, an increase of Yen 1,493,613 over the corresponding period, 1909. The average mileage, including 640 miles in Chosen, was 5,346 miles, 146 miles more than in 1909.

THE PENINSULAR RAILWAY.—The construction of the Siamese end of this line from Petahaburi along the east coast toward the Kelantan border where it will join the line from Singapore is progressing. A branch running west from Tung Sawn to Trang on the west coast is also included in the Siamese railway program. Penang is agitating a link connecting Prai via Kedah and Perlis directly with the Siamese line. The *Bangkok Times* claims that with the completion of the present line to Trang the latter would be Penang's natural port. The *Penang Gazette* claims that the outcome of the present plans means that Penang will be left out in the cold.

AUSTRALIAN RAILWAYS.—The number of miles open to traffic during the year ended June 30, on the New South Wales State system, was 3,643, with 253 miles under construction. The interlocking system of signals is being installed and an electro-pneumatic installation was completed at Sydney. This system carried 53,644,271 passengers and there were no accidents or casualties during the year.

The Victoria State Railways have an open line of 3,544 miles including 81 miles added during the year and 124 miles under construction.

BRITISH LOCOMOTIVES FOR THE SHANGHAI-NANKING RAILWAY.—A description of the four locomotives built by Messrs. Kerr, Stuart & Company, Ltd., of Stoke-on-Trent, for this company has been received. The drivers have a diameter of seven feet; the wheels of the bogie are three feet, six inches, and pair of trailers four feet nine inehes in diameter. The cylinders are 18 inches, stroke 26; the boilers are 12 feet 10½ in length with a diameter of 4 feet 9½ in., its center line pitched at 9 feet above rail level. Each boiler has 188 tubes of 2¼ in external diameter and a heating surface of 1,650 square feet is provided so as to utilize the coal available. They are fitted with Westinghouse brakes. Among the other auxiliaries provided, are Vacuum Oil company's lubricators, Laycock's steam heater and Holden & Brooke's injectors. The tenders have each 10 ton fuel space and capacity for 3,500 gallons of water. The dead weight of each engine is 50 tons and the tender 19 tons 9 cwt.; working, the total for engine and tender is 98 tons, 14 cwt.

F. M. S. RAILWAY SUPPLIES.—The railway bureau has been authorized to expend $152,600 in further equipping the line for the proposed night service between Singapore and Penang. The expenditure will include $106,000 for additional rolling stock, $34,400 for two buffet cars and $12,200 for fitting the coaches with electric light and fans.

PERSONAL

Mr. William B. Poland, chief engineer and general manager of the Philippine Railway Company, sailed from Manila, November 13, for the United States on leave. Mr. Alexander Strausz, jr., auditor for the company, will be in charge as acting general manager during Vice-President Poland's absence.

Mr. A. W. U. Pope, general manager of the Shanghai-Nanking Railway, is enjoying a furlough in England and just before his departure he was the guest of the Chinese Chamber of Commerce at a dinner given in his honor at Mr. Chew's Garden, October 25. He was later presented with a handsome silver bowl by the railway staff and half dozen gold and tortoise shell pieces to support the center piece for Mrs. Pope. A small silver bowl was added as a recuerdo by the members of the Chinese Staff. Tao-tai Chung Mun Yew, the Director General, made the presentation. Mr. Pope proceeded via the Trans-siberia route.

KOREAN CONSTRUCTION.—The reconstruction of three tunnels, one of which is 400 feet in length, and the repair of a dozen bridges on the Seoul-Wiju line will be completed by the end of the year. Over 30% of the reconstruction program is reported complete.

The Seoul-Gesan survey was completed and construction work begun in September.

The Paju-Chinnampo line, 34 miles in length, was opened for traffic the first of the month.

The construction work on the Honan line was undertaken in September on the section between Taiden and Renzan.

THE FUKIEN RAILWAY.—The company expects to open the line to traffic to the southern bank of North River from Amoy by the Chinese New Year.

ANOTHER SOUTH CHINA LINE.—A project has been under way for some time to construct a railway from Chao-Chowfu via Kit-yang Puning, Hui-lai, Lu-fung, Hai-teng and Tan-Shui to connect with the Kowloon-Canton line at Shen-Chun covering a distance of 600 li. A Chinese company, with a capital of $10,000,000 gold, was organized about a year ago and it is understood interest in the project was recently revived.

WIDENING JAPANESE GAUGE POSTPONED.—The Railway Bureau has decided to postpone the expensive program of widening the gauge to standard for the reason that it would take many more millions than are available for annual expenditure and the country in many sections is sadly in need of new lines and securing better facilities to these districts is of greater importance to the country.

PHILIPPINE GOVERNMENT ARCHITECT'S REPORT.—During the year ended June 30, 1910, this office prepared plans covering 175 projects with an estimated cost of ₱7,310,000. In the development of the Burnham plans for Manila, parking the moat is to be continued between Calle Palacio and Victoria to provide two baseball diamonds, a foot-ball field and six tennis courts.

GOVERNMENT WHARVES, PENANG.—During the year 245 feet extension at the northern end was practically completed and the southern extension is progressing very favorably. When finished there will be a total length of 1200 feet alongside.

DERHAM SHIPPING AND WAREHOUSE CO.—This firm has secured a site for a large warehouse on the new harbor, Manila, and will construct a two-storey building 250 by 100 feet, between the two large piers. The warehouse section is to occupy the first storey and will be divided into chambers for receiving and delivering goods. The second storey will be divided into offices. The building will cost ₱160,000. The plans were designed by the Eastern Engineering Co. and the Manila Construction Co. has the contract. It will be built of reinforced cement and guaranteed fireproof.

KUALA LUMPUR WATERWORKS.—The total estimate for this extension project amounts to $800,000, Straits Cur., of which $140,000 will be spent this year.

LOCOMOTIVES FOR JAPAN.—The Railway Board has authorized the importation of 66 locomotives of German, British and American manufacture during the year. Sixty of these will be for passenger service and six for freight.

WHITE ANTS INVADE JAPAN.—The Railway Board is greatly agitated over the general attack made by white ants on the railway sleepers on the Kyushu line, especially the soft woods. As the result of an investigation it was found that the pest did not thrive in the sunshine.

OBITUARY.—News has been received from New York announcing the sudden death of Sir Clifton Robinson, the well known British railway expert. It is understood that he was in New York to confer with the Speyer interests with a view to extending railway operations in the Philippines.

BANGKOK WATERWORKS CONTRACT.—The contract for the supply of cast iron pipes, joint bolts and rubber rings for joints was awarded the Société Anonyme des Hauts Fourneaux et Fonderies de Pont-à-Mousson, the prices offered were pipes, $32.85 gold per ton; joint bolts, $9,27 per 100 kilos, and rubber rings, $295 per 100 kilos. The other bidders were Macfarlane, Strang & Co., Glasgow, and the Société Métallurgique du Périgord.

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to instal a twenty stamp mill on the property and that the shareholders turn over 20% of their stock to be placed on the market to cover the expense. The following directors for the newly incorporated company which took over the old partnership interests were: Judge F. B. Ingersoll, Robert Lienau, Eduardo Soriano, Geo. C. Sellner, and Captain Wilson. Geo. C. Sellner was elected president, Judge Ingersoll, vice-president, and Robert Lienau, secretary-treasurer.

THE MAJOR MINES.—This company which has been active in the development of property near Baguio is preparing to instal a hydro-electric generating plant on one of the streams in that locality. It is expected to develop 1500 h. p.

BATAN COAL MINING CO.—President Daniels went to Hongkong the latter part of October for the purpose of purchasing two colliers for his company.

THE NUEVA ECIJA FIELDS.—A movement is on foot among the different owners of property on the Chica to organize a holding company with a view to comprehensive development. The preliminary steps have been taken and the owners of several thousand acres have signified their approval. A survey is now under way.

New Zealand capital is negotiating for several properties in the Nueva Ecija field and we understand that the Cebu company is concluding arrangements for the installation of machinery on its property.

PHILIPPINE OIL.—Prospecting work on the Tayabas oil field continues and a report on the work is expected in a short time.

Prospectors from the vicinity of Sual, a port on the coast of Pangasinan province, report the presence of oil deposits in that vicinity. Their extent is unknown and little testing work has been done.

THE LEPANTO COPPER.—News has just been received from these extensive deposits that on the Chamber's group a large body of ore has been uncovered during the month. These deposits are near the old Spanish mine. Work has been in progress on this group for several years, but persistent effort has been rewarded in a substantial way. This report removes all doubt as to the extent and value of these outlying deposits and further work, we understand, will be expedited.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIPS, AUTOMOBILES, ETC.

ELECTRIC HEATING AND COOKING APPARATUS FOR SHANGHAI.—The Electricity Department has ordered twelve "cookers" from Messrs. Jardine Matheson & Co., eight ovens, and twelve combined ranges and grills from the Shanghai Electric & Asbestos Company together with 20 therol water heaters from the former firm. All this apparatus will be available for hire.

THE TOKYO RAILWAY EXTENSION.—Of the 119 miles of this project, 55 miles were to have been completed this year, but up so far only six miles are finished and an extension has been asked for.

PERSONAL.—Mr. Alexander Bell, the inventor of the telephone and promotor of aviation, paid a visit to Far Eastern ports last month.

TELEFUNKEN WIRELESS.—Permission has been granted the Telefunken Company of Berlin to instal stations in the Philippines to demonstrate the effectiveness of its system. Messrs. Germann & Co., Ltd., are the agents in the islands. This company installed a station at Yap and with the Philippines station connection would be completed between Australia and Eastern Asia.

MANILA AUTOMOBILE CLUB —The owners of automobiles in Manila have organized a club and incorporated under the laws of the islands.

PERSONAL.—Mr. C. B. Graves, general manager of the Manila Electric Railroad and Light Co., is expected to return to the Philippines in December.

SHANGHAI TRAMWAYS.—The report of the Société des Tramways et Eclairage Electrique de Shanghai for the last financial year, says the "Electrical Review," shows a profit of £3,916, which is being devoted mainly to depreciation, leaving a small balance to be carried forward.

ELECTRICITY DEPARTMENT, SHANGHAI —The report of Mr. T. H. U. Aldridge, Electrical Engineer, for the half year ended June 30 shows a profit of Tls. 47,721. The following comparative table is submitted:

		June 1909		June 1910
Total lamps connected		182,141		198,572
Motors H. P.		653		955
Units Generated		481,962		561,757
Units sold and accounted for		425,609		498,544
Private Lighting		192.493		216,756
Public Lighting		44,814		54,316
Power		19,580		39.989
Traction		148,938		163.773
Used at Works		19.784		23,710
Ratio		88 31		90.53
		lbs.		lbs.
Coal per unit generated		5.38		5.13
Coal per unit sold		6 09		5.78
Revenue	Tls.	37,299	Tls.	42,903
Expenditure		35,657	,,	38,041
Profit		1,642	,,	4,862
Total profit to date		31,278	,,	47,721

NEW JAPANESE AEROPLANE.—Baron Iga is reported to have perfected a new model and proposes engaging in manufacturing aeroplanes for the market. Details of its construction are lacking.

JAPANESE WIRELESS.—The training ship Taisei Maru is to be equipped with apparatus and orders have been issued to have the Kasado Maru and the Sanuki Maru on the Formosan line similarly provided.

THE FUSAN-TSUSHIMA CABLE.—A report has been received to the effect that the Japanese Department of Communications have purchased this line from the Great Northern Telegraph Company. This cable is 60 miles long and was the last foreign cable operating in Japanese waters. The price paid is said to have been yen 150,000.

JAPANESE NAVAL BIPLANE.—Chief Naval Constructor Usioku is reported to have invented a machine equipped with hydroplanes, so as to be able to descend to the surface of the water and rise therefrom.

THE EASTERN TELEGRAPH CO., LTD.—The Eastern Telegraph Company, Limited, announce the payment on Oct. 15 of dividend at the rate of 3½ per cent. per annum, less income tax, on the preference stock of the company for the quarter ending Sept. 30, 1910, and the second quarterly interim dividend of 1¼ per cent. on the ordinary stock, free of income tax, in respect of profits for the year ending Dec. 31, 1910.

MILITARY WIRELESS FOR THE PHILIPPINES.—The latest model for field service received by the Chief Signal Officer of the Division consists of two chests which may be packed on one mule. It can be set up in fifteen seconds and has a practical working radius of fifteen miles.

JAPANESE ELECTRIC COMPANIES.—The first general meeting of the Katsura-gawa Hydro-Electric Company and the inaugural meeting of the Electric Apparatus Co. were held the latter part of October. It is the purpose of the two companies to amalgamate later with a joint capital of Yen 8,000,000.

ELECTRIC MACHINERY TRADE IN CHINA.—Mr. W. P. Ker, Commercial Attaché at Peking, states in his report that during the year 1909 contracts were given out for new electric light installations at Chungking, Chengtu, Changsha, Nanking, and Ningpo, and for more or less important extensions at Shanghai (settlements and native city), Hankow, Peking, Swatow, Mukden, and other places. Negotiations were proceeding at the beginning of 1910 for a large installation at

THE CHINESE EASTERN RAILWAY.—In the budget for 1910 the deficit amounted to 550,000 roubles, but the prospect for 1911 is brighter and net receipts amounting to 300,000 roubles are anticipated.

THE CANTON-HANKOW RAILWAY.—Advices from Peking announce the transfer of Mr. Hsi Si Tsung, assistant director of the Peking Mukden line, to be assistant director of this line.

THE BURMA RAIWAYS.—The total earnings for the half year amounted to Rs. 36,09,999, an increase of Rs. 1,15,440 over the corresponding term 1909.

SOUTH MANCHURIA AND KIRIN-CHANGCHUN RAILWAYS.—An agreement has been concluded providing for connections between these two lines. All passengers from the Kirin-Changchun line will be made at the South Manchuria station and freight at the depot of the new line except for transfer to western and northern points over the Chinese Eastern. The Kirin-Changchun company agrees to undertake the construction of the joint sidings and connecting tracks between the terminal points, half the expenditure to be chargeable to the South Manchuria Railway.

YUNNAN-BURMA RAILWAY.—The construction of this connecting line by the Chinese and the British is being promoted, the former to construct the southern section and the latter the northern. It is proposed to have the line connect with the French line in Annam.

HUKUANG RAILWAYS.—Viceroy Jui Cheng has proposed the construction of a circular railway to include Changsha, Changte and Chengchou, one line from Changte to Jungchun, another from Changte to Hsiang-yang via Ichang with future extension to Kai-feng-fu together with another from Ichang to Yunning. He has memorialized the throne for approval of a foreign loan covering these projects.

SOUTH MANCHURIA SERVICE.—Four trains a week from Dairen to Changchun were inaugurated the last of October. Trains leave Dairen at 6 p. m. Sunday, Tuesday, Thursday and Saturday arriving at 9:55 the following day at Changchun and leaving the latter point for the south at 7 a. m. Tuesday, Thursday, Saturday and Sunday.

HANKOW-SZECHUAN RELIEVES JAPANESE ENGINEER.—A report from Hankow is to the effect that Chief Engineer Hayashi has retired and that of 50 Japanese engineers formerly employed none are now associated with the line.

PROFITS OF CANTON-HANKOW BRANCHES.—The Kwantung division of this line will receive 30 per cent of the profits of the Samshui branch operated by the Three Provinces. The largest profits heretofore were $50,000 for one year, but they are expected to double during 1910.

KIRIN-CHANGCHUN CONSTRUCTION.—It is expected that construction trains will be introduced on the first 35-mile section from Changchun in April of next year. The earthwork is now well up and the work will be expedited all along the line as soon as the snow goes out so that trains will be operating by autumn.

THE SEOUL-WONSAN RAILWAY.—The Railway Board of Japan has completed plans for this line and the contract for the section between Yongsan and Ohongyangli is reported to have been let.

CHEKIANG RAILWAY.—The latest and the Chekiang situation is to the effect that the Board of Communications proposed taking over the shares of the company at 30% discount but this the shareholders refuse to consider.

RAILWAY LOANS.—Alterations proposed to the original form of the loan agreement for the Canton-Hankow Railway by the Vice-President of the Board of Communications have been refused by the foreign groups.

THE MANILA RAILWAY SOUTHERN LINES.—On the Noveleta-Naic branch the track has been laid to Santa Cruz River and as soon as bridge is finished traffic will be started to Santa Cruz de Malabon. The grading has been practically completed to Naic. *Batangas Extension.*—The line was open to Lipa in October and extended to San Jose this month. The Lucena line has been graded to Alaminos and grading San Pablo.

The Calamba-Santa Cruz de Laguna Branch was opened some time ago to Bay, the final location has been made to Magdalena and construction is progressing favorably.

Hangchow and for installations in several cities in Manchuria. Indeed, there may be said to be an electric lighting project in every city in China (although at Pakhoi the project is stated to have been abandoned in view of the successful introduction of incandescent gas mantles); the only difficulty is to find funds for carrying such projects into execution. Almost all contracts require to be financed by the contractors, and British firms, finding British manufacturers unwilling to supplying plant except for cash down, have sometimes co-operated with German firms, the latter arranging the finance in return for being allowed to participate. Thus several of the contracts mentioned above are for British engines and boilers and German dynamos. Payment is generally spread over a period of two or three years on proper security being given.

In further illustration of the progress in electrical works it may be mentioned that an electric tramway scheme for Canton is under contemplation, that a considerable extension of the telephone system in that city has recently been carried out, and that preparations are being made for inaugurating telephone services at Chengtu, at Wuhu, and in the provinces of Kiangsi and Chekiang.

PUBLIC WORKS, DOCKS, WHARVES, BUILDINGS, ETC.

HONGKONG'S TYPHOON SHELTER.—The contract has been let for the construction of a breakwater to provide a harbor of refuge for Hongkong's shipping. This breakwater will extend 3,300 feet from a point near the Asiatic Petroleum Co.'s tanks at Tai-Kok-Tsui to a point opposite the Yau-ma-tei police station with an opening at one end of 400 feet. Its total height will be 53 feet and its width about 200 feet. The contract price is approximately $2,000,000 Mex.

CHINESE POWDER MAGAZINES.—General Yin Chang has recommended the construction of a large magazine at Tientsin or Shanghai.

BUILDING CONSTRUCTION IN MANILA.—The three-storey reinforced concrete building constructed by the Elks' Club was ready for occupancy Thanksgiving Day. This building cost about ₱200,000 and will make one of the most modern Clubs in the City.

JAPANESE HARBOURS.—The Home Minister referring to the development of harbours is quoted as follows:

"The bays and harbours in Japan which require investigations total 700 in all. Out of these such harbours as Yokkaichi, Shiobara, etc., have been already duly investigated; but those of Noshiro, Funakawa, Sakata and others in Akita and Yamagata prefectures still remain to be studied. The Government intends to bestow special care in investigating the harbours of Miyako, Kamaishi, Kuji, Nobechi, and Aomori, etc., and to adopt the best method of improving them; yet this project will not be put into practice until the investigations made into the status of all the harbours and bays is complete.

MINDANAO PUBLIC WORKS.—The Legislative Council has appropriated ₱44,991.45 for public improvements including for construction of roads and bridges ₱27,656.45, construction and repair of buildings ₱5,135 and the balance for miscellaneous items.

HAINAN PUBLIC WORKS.—The proposed improvement of the port of Haihow which has been agitated for several years has not been materially advanced. The shipping trade with Wenghang has lacked encouragement to the expense of landing goods. It is estimated that an expenditure of Tls. 500,000 would cut a channel large enough to accommodate launches from the present anchorage to the port proper through the mud flats.

MURORAN HARBOR IMPROVEMENTS.—The plans for this harbor include the construction of embankments covering a distance of 2200 feet on the west end of the city with another 3,000 feet long directly opposite on the other side of the bay. Between these two embankments a channel 1300 feet wide will be dredged and a railway pier with a frontage dredged to receive ocean liners alongside.

PUNJAB IRRIGATION.—The main canals have a mileage of 2,866, the branches, 1,629, and the distributing canals total 12,384 miles irrigating an area of 6,800,000 acres. The Lower Schenal Canal returned 22.5% on investment while the lowest return was 3.75%, making an average of 12.25% return in profits for the entire investment.

PHILIPPINE PUBLIC WORKS.—During the year ended June 30, 1910, a total of over ₱7,000,000 was expended in public improvements in the islands or over 25% of the total revenue of the government. Of this amount ₱5,288,028 for roads and bridges, ₱1,500,000 for public buildings; ₱171,000 for irrigation and ₱129,345 for artesian wells. The bureau has 1,171 regular employees, 456 Americans and 715 Flilipinos, regularly employed.

WEST RIVER FLOOD CANAL.—The balance of Tls. 200,000 available for famine relief will probably be expended in providing a canal from Shiuhing to Ngaimun by way of Sanning, thus relieving the lands liable to damage from floods. Shiuhing is a point 20 miles above Samshui and the total length of the course provided will be about 65 miles.

THE SINGAPORE BUDGET.—The estimated revenue for the year 1910-11 is placed at $3,000,000, Straits Cur., and the expenditure $3,500,000. The rates as announced will be 12% on assessment with one per cent for education and three per cent for water supply. With the balances from 1910 there will be a surplus of about $80,000.

BAGUIO IMPROVEMENTS.—The Philippine Government proposes erecting a city hall, 80 cottages and two dormitories for officials and employees, a building for the Supreme Court; public baths, besides the construction of lagoons with a complete drainage system A system of drives and bridle paths has also been surveyed.

NAGOYA HARBOR.—The sum of yen 1,909,000 has been appropriated to carry on the work of extending the harbor. The original estimate was reduced from yen 3,000,000.

SHIPBUILDING, MERCHANT MARINE, AND FISHERIES

THE PHILIPPINE STEAMSHIP CO.—This new company recently organized inaugurated its new service with the sailing from Hongkong of the steamer Rubi, November 9. The Rubi and Zafiro, recently transferred to the American flag, will sail to Manila direct from Hongkong and will then proceed to Iloilo and Cebu returning to Hongkong via Manila. The service will include five round trips every two months.

JAPAN'S NAVAL ACTIVITY.—It is announced that Japan has placed orders for warships in British yards owing to the activity in local yards. The additional allotment of yen 80,000,000 is to be expended in meeting the expense of increasing the displacement of vessels planned under the regular program from 5,000 to 7,000 tons which would take yen 20,000,000 of this amount and the balance of yen 60,000,000 was to be spent in constructing a 25,000 ton battleship and a large armored cruiser.

MINDANAO PEARLING INDUSTRY.—The report of the Governor of the Moro province states that export of shell for the year ended June 30, 1910, was valued at P267,343.80, an increase of 82% compared with the year previous. Twenty three licenses were issued to boats carrying divers.

THE MEXICO MARU.—This vessel, constructed for the Osaka Shosen Kaisha by the Mitsubishi Shipyard at Nagasaki, was scheduled to sail from Yokohama, November 1, for Tacoma. She is of 6,200 tons and cost yen 1,200,000. Her sister ship, the Canada Maru, is expected completed by March, 1911.

HOKKAIDO FISHERIES.—The production for the year was valued at yen 9,460,000 of which herring predominated with a value of yen 5,776 980. However, the catch of herring has gradually fallen off from an annual production of yen 10,500,000 in 1897. Change of current and the destruction of forests affecting the current of fresh water are charged with being responsible for driving the fish away from that section of the coast. There are 20,000 families engaged in the fishing industry at this point.

BLACK BASS IN BENGUET.—The Philippines Government has met with success in stocking the mountain streams during the last three years and experiments are proposed with a view to introducing the top minnow into insular bodies of water for the extermination of mosquitoes.

HONGKONG LAUNCHING.—A steel launch, constructed at the yards of Messrs. W. S. Barley & Co., Kowloon, to the order of the Taku Pilot Co. of Tientsin, was successfully launched last month. The vessel is 54 feet long.

KOREAN FISHING CO.—This organization recently formed with a capital of yen 2,000,000 has been granted permission to establish 200 fishing stations in North Chosen and to open large fish markets at Wonsan, Shinpo, and Chongzin.

JAPANESE OTTER AND SEAL FISHING.—Eleven vessels comprising the fleet of the Japan Pelagic Fishery Co. recently returned from the Northern waters, turned in ninety sea otters and 2,400 fur seals caught off Kamschatka, the Kuriles, Behring Sea, and Alaska.

JAPANESE SHIPPING.—The total number of vessels cleared at Japanese ports for 1909 was 24,754 with a tonnage of 39,682,950, including 19,972 steamers of 39,432,117 tons aggregate. Of the latter the Japanese steamers numbered 13,174 with a total tonnage of 19,098,100. The export of silk was valued at yen 124,243,239 yen, an increase for the year of yen 15,634,187. There was an increase in cotton manufactures of yen 18,050,000 with a decline in imports from the United States and an increase of yen 21,426,272 in cotton goods.

MINES, MINERALS, AND THE METAL TRADE.

KANSU GOLD AND COPPER RESOURCES.—Mr. Charles H. Hansen, writing for the *Mining Journal*, states that Kansu has untold wealth in gold and copper. Mr. Hansen is installing a complete copper smelting plant with a capacity of 50 ton daily for the Chinese Government about 100 miles west of Lanchowfu. The plant is supplied by Messrs. Fraser & Chalmers Ltd., and consists of a circular water-jacket furnace, three 1.50 ton convertor shells and a 10 ton refining furnace. There is an abundance of limestone, coal, iron and fireclay near the plant. He writes that the mines are within a radius of 80 miles and 1,000 tons of ore are already in stock at the smelter. Regarding gold deposits, Mr. Hansen states that there are numerous placers between the site of the smelter and the Tibetan border. Quartz runs from one to two and one half ounces to the ton and gravel from the river pans two grammes to the cubic yard. The Chinese will grant concessions for working gold but not for copper. A few stamp mill has been installed near the site of the copper smelter but both await a circulating pump before operations will commence.

JAPANESE MINERAL PRODUCTS TRADE.—The total value of exports for 1909 was valued at yen 43,221,316 and the import yen 53,328,897 making a total trade of yen 96,550,213. The export included copper (ingots and slabs) yen 21,071,383, tin (ingots and slabs) yen 24,439; antimony yen 120,815; brass and yellow metal, yen 175,018; sulphur, yen 13,344; copper ore yen 642,756; zinc ore, yen 642,756; coal yen 17,297,139. The important imports were copper (ingots and slabs) yen 382,154; lead (ingots, slabs, etc.) yen 1,286,668; tin, yen 1,116,377; zinc, yen 1,885,463; iron and steel yen 26,-878,724; kerosene oil, yen 11,657,300; coal yen 1,090,735.

DUFF DEVELOPMENT CONVERTIBLE DEBENTURE STOCK.—The issue of 250,000, six per cent for development in Kelantan was taken at par in London. An active policy has been outlined. The total output of gold last year from the four dredgers was 8,524 ounces and the gross profit £10,235. The results up to June 30 this year were most disappointing, the dredging operations showing a loss of £1,225 owing to their working on untested ground. One of the dredges had been moved to the Mengirri River property and showed paying results.

CHINESE ENGINEERING AND MINING COMPANY.—The annual general meeting of the shareholders of the Chinese Engineering and Mining Co., Ltd., was held in London, on the 28th October, when the Directors' Report and Accounts for the financial year ending 28th February, 1910, were submitted. Following is an extract from Directors' Report:—

The net result of the year's transaction shows a balance to the credit of Profit and Loss Account of £202,010 made up as follows:

Net profit, after providing for all charges in China	£243,298	
Add balance brought forward from last year	£1,435	
Gross receipts in London	605	2,040
Total		£245,338
Deduct Expenses in Europe	£ 6,205	
Debentures, interest	23,873	
Debentures, redemption	10,000	
Directors' fees	3,250	43,328
Leaving a net balance of		£202,010

Which the Directors recommend should be appropriated as follows:

In placing to Reserve for Depreciation (making a total Reserve of £245,000.)	£ 30,000
In paying a final dividend of 1s. 6d. per share (free of tax), payable 2nd Nov., 1910	75,000
Making a dividend of 15 per cent. for the year with the interim dividend of 1/6 per share paid on 1st May, 1910	75,000
Directors' percentage on profits in accordance with the Articles of Association	7,058
Income Tax	9,940
And carrying forward	5,012
	£202,010

THE ORIENTAL CONSOLIDATED MINING COMPANY.—The output of this plant for the year amounted to $1,700,000 gold. The company has 450 stamps and has been operating 15 years.

PERSONAL.—Mr. R. Y. Hanlon, an American mining engineer who has been engaged in expert work in Korea for four years, has decided to establish himself in the Philippine Islands.

THE PEKING SYNDICATE.—The total output of coal for September amounted to 31,600 tons.

WESTERN AUSTRALIAN MINES.—The total value of the mineral output for 1909 was valued at £7,059,052, a falling off of £185,000. The decrease in gold output was £233,600 and in tin £17,638. The increase in copper was £47,553 and in coal £15,270. The value of the yield in gold amounted to £6,776,275; copper, £104,650; tin £65,959. The six collieries of the state provided an output of 214,302 tons.

SUNGEI RAIA TIN MINES OF PERAK.—The report for the six months ended July 31 shows an output of 1771 piculs valued at $71,644 (Straits Cur.). Chinese coal has superseded the Welsh anthracite for fuel at a saving of $5 per ton.

GOLD IN KWANTUNG.—Near the northern boundary of the peninsula the Japanese claim to have discovered rich gold and silver deposits covering an area of 5,000,000 square yards. The ore is said to show very high values. Samples showing several thousand dollars to the ton in gold and placer values in the streams are also reported. A thorough investigation has not been concluded, but the Japanese interested have applied for a franchise to develop the deposits.

BURMA MINES LTD.—The production for September is represented by 571 tons of lead containing 2855 ounces of silver. 561 tons were shipped and 36 tons sold locally.

SIAMESE COAL.—The coal deposits in Bandorn are said to be lignite and cover a large area. Their development is being considered.

EASTERN PETROLEUM CO. LTD.—At a recent meeting at Singapore this company decided to undertake active development of their large concessions covering 44,000 acres of oil bearing lands in Java. An assessment of $40 a share was authorized.

THE FUSHUN COAL MINES.—The output for the year is estimated to reach 800,000 tons and it is expected to reach 1,000,000 annually when the Togo mine is developed to its fullest capacity. Of this output the South Manchuria Railway uses one-third; one-third is utilized by factories and steamers locally; 30,000 tons go to Harbin and the balance is shipped to foreign countries.

F. M. S. TIN EXPORTS.—For the nine months ended September 30, 107,000 piculs of tin and 415,610 piculs of tin ore were exported from the F. M. S., a decrease of 17,723 piculs compared with the corresponding period, 1909. These figures do not include Pahang.

THE KAMUNING TIN COMPANY.—An interim dividend of 15 % has been authorized.

THE HANGYANG IRON WORKS AND THE HAN-YUEH-PING IRON AND COAL CO. LTD.—The output of the Ta Yeh mines for 1909 was 306,000 tons magnetic iron ore and 1,500 tons of manganese ore. The Hangyang Iron Works produced 74,000 tons of pig iron and shipped a total of 16,800 to Shanghai and Chinese ports, 23,700 to Japan and 3,800 to America. A total of 28,500 tons of steel rails and fastenings were supplied the Chekian-Kiangsu, Fukien, Canton-Kowloon, Tientsin-Pukow, Yueh-Han and Peking-Hankow. The output of the Pingsiang Colliery amounted to 520,000 tons of which 106,000 tons were coking coal for the Hanyang Iron Works.

F. M. S. TIN OUTPUT.—The ouput for September amounted to 11,123 piculs. During October tin was quoted at $80 (Straits Cur.) the highest price for the year.

JAPAN'S STEEL INDUSTRY.—The Wakamatsu Steel Foundry in Kyushu is at present the only establishment of the kind in this country, says the *Chamber of Commerce Journal*. A decade ago, when the Foundry was established at Wakamatsu, the output did not exceed 50,000 tons annually. The Foundry is at present turning out 300.000 tons of steel of various descriptions. Japan now imports steel to the value of Y. 50,000,000, in addition to machinery, etc., amounting in value to Y. 50,000,000, making a total of Y.100,000,000.

FINANCIAL, COMMERCIAL AND MISCELLANEOUS.

NEWLY ORGANIZED JAPANESE COMPANIES.—The total capitalization of new companies organized during the first eight months of this year is represented by Yen 176,250,000 according to financial reports. Of this over 62,000,000 has been added to manufacturing enterprise while yen 42,000,000 has been invested in railways. Electrical enterprises come next with a capitalization of 27,500,000 followed by mining, 15,250,000.

SAGHALIEN TURPENTINE INDUSTRY.—The British Consul at Hakodate reports that the Japanese government has shipped machinery to Saghalien for the purpose of developing this industry in the island.

JAPANESE FLOOD FUNDS.—The Home Department has advanced Yen 1,730,000 to the eight prefectures suffering from flood damage to aid them in repair work. Interest is charged at the rate of 4.2% per annum.

RUSSO-ASIATIC BANK AMALGAMATION.—The amalgamation of the Russo-Chinese Bank and the Banque du Nord under the style of the Russo-Asiatic Bank was made effective from October 17.

BEET SUGAR IN MANCHURIA.—The Fu Hwa Sugar Manufacturing Company is establishing a beet sugar factory at Harbin which will have a daily capacity of 140 tons. Over 4,000 acres owned by the company have been planted in beets. The company is capitalized at $630,000 gold.

JAPAN'S BUDGET.—The approved draft of the budget for 1911 is reported to provide for an expenditure of yen 530,000,000.

CHINA'S BUDGET—The following is the statement issued by the Board of Finance:

ANNUAL RECEIPTS

	Tls.
Land Taxes	48,101,346
Salt and Tea Taxes	46,312,255
Customs Duties	42,139,287
Other Duties	26,163,842
Likin	43,187,907
Government Property Receipts	46,600,899
Contributions,	5,652,333
Miscellaneous Income	35,241,750
Public Loans	3,560,000
Total	296,962,722

ANNUAL EXPENDITURES

	Tls.
Administrative Expenditure including Civil List	26,921,274
Foreign Affairs	4,001.308
Civil Ministry	22,460,761
Financial Expenditure	25,161,855
Ceremonials	799,797
Education	16,149,540
Judicial	6,835,325
Military	97,498,656
Works	5,087,394
Communications	56,703,263
Goverment Property Payments	7,696,361
Payment of Foreign Debts	51,640,952
Frontier Defence	1,239,908
Public Loan Expenditure	4,472,613
Total	333,058,364

F. M. S. RUBBER—The returns for September place the output at approximately 540,000 pounds.

SUGAR REPORT OF ILOILO.—In Messrs. Figueras Hermanos shipping report for the Port of Iloilo for the year ending Sept. 30th, there were 160 steamers with a net tonnage of 236,012 cleared from that port against 114 with a net tonnage of 180,181 for the previous year. Of these vessels 75 were British, 37 Norwegian, Spanish 13, German 17, French 8, Japanese 2, Chinese 5, American 2, and Danish 1. The chief shippers were Messrs. Ker & Co., with 520,000 piculs of sugar while Messrs. W. F. Stevenson & Co., Ltd., followed with 266,400; Messrs. Warner Barnes & Co., Ltd., with 190,400; Messrs. Smith, Bell & Co., Ltd., with 158,000 and the Compañia General de Tabacos de Filipinas with 56,000 piculs. There were eight other shippers with a total of 123,936 piculs.

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, November 4, 1910.

STOCK.	When Established	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND.	Approximate Yield per cent per annum at Present Quotation	CLOSING QUOTATIONS
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	120,000	$125	$125	g £1,500,000 s $16,000,000 i $250,000	$2,029,390	31-6-10	£2. for first half year ending 30-6-10, @ ex 1|9⅜ = $22.456	5%	$880 £86|10
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	c £4,099 $400,000	$34,167	31-12-09	$2 (London 3|6) for 1903	....	$81 buyers
MARINE INSURANCES.											
Canton Insurance Office, Ld.	1881	$2,500,000	10,000	$250	$50	$1,560,000 j $254,583 u $302,799	Nil.	31-12-08	$15 for 1909	8½%	$175 buyers
North China Insurance Co., Ld.	1903	£'50,000	10,000	£15	£5	g £125,000 s Tls. 225,000 u Tls. 368,644 f Tls. 137,308	Tls. 205,719	30-6-10	Final dividend of 7½% for 1909 making 15% in all....	5%	Tls. 110 sales
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	s $3,000,000 g £90,000 f $287,984 j $1,449,735 u $713,985	2,552,545	31-12-09	Final of $20 per share, making in all $50 per share for 1908, and an int. div. of $30 per share for 1909	6%	$840 sellers
Yangtsze Ins. Association, Ld.	1889	$1,200,000	12,000	$100	$60	$1,000,000 j $371,802 $169,861	$797,602	31-12-09	$12 for year ending 31-12-08 and interim of $3 on account of 1909	7¾	$195 sellers
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 z $550,348 f $61,168	$438,406	31-12-09	$6 and bonus $2 for 1908	7%	$116 buyers
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,460,000	$426,218	31-12-09	$27 for 1908	8%	$350 sales
SHIPPING.											
China & Manila Steamship Co., Ld.	1882	$750,000	1) 30,000	$25	$25	i $57,734	Dr. $3,777	31-12-09	$4% for 1906	....	$9 sellers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$230,000 i $100,589	Nil.	30-6-10	$2½ for year ending 30-6-1908	....	$21 sellers
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	e $250,000 d. i. $630,000 f $130,545 $ 1 106	$18,026	30-6-10	Dividend of $1½ for half year ending 30.6.1910	8½%	$31½ sales
Indo-China Steam Navigation Co., Ld. (Preferred) Do. Do. (Deferred)	1882 m	£600,000	2) 60,000 2) 60,000	£5	£5	i £148,891	£15,162	31-12-08	No dividend paid for last two yrs.	....	$58 sellers
"Shell" Transport & Trading Co., Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£120,000 i £1,000,000	£205,868	31-12-09	Final div. of 2|6 per share (coupon 14) making in all 4|6 per share for 1909, and an int. div. of 1s. per share on % for 1910	5%	82|- £11 buyers
"Star" Ferry Co., Ld.	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$6,500 i $55,830	$1,159	30-4-10	A dividend of 7% and bonus of 5% making 12% for year ending 30.4.1910	5% 6%	$23 $12½ buyers
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	e $520,000 r $83,620	Dr. $8,090	31-12-09	$5 for half year ending 30-6-1910.	6%	$145 sellers
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	Dr. $101,851	31-12-09	$3 for 1897	—	$24
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	d £215,000 h £12,289	....		Final div. of 1|6 for the year 1910 making 15% (coupon 15)	9%	Tls. 16
Headwaters Mining Co.	1908	₱600,000	28) 600,000	₱10	₱10				First year		₱10 buyers
Raub Australian Gold Mining Co., Ld	1892	£200,000	150,000 50,000	£1 £1	18-10 £1	£4,873	Dr.	..	1|2 per share, 13th div.	5%	$6¾ sellers
Oriental Consolidated Mining Co. Ld.	.... g	$5,000,000	500,000 g	$10	$10	none	....	..	Final of gold $0.65 for 1909 in all g. $1.15	..	30|- buyers
DOCKS, WHARVES AND GODOWNS.											
Fenwick (Geo.), & Co., Ld.	1889	$450,000 z	18,000	$25	$25	$25,275	Dr $8,460	31-12-09	$1⅛ for year ending 31-12-06	....	$9 sellers
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$3,000,000	60,000	$50	$50	$550,000 t $31,993 s $40,000	$4,848	31-12-09	$2½ for 1909	4½%	$57½
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	i $88,214 v $221,000	$148,940	30-6-10	3% for half year ended 30-6-1909	..	$48 buyers
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	....	..	Final of Tls. 3½ making Tls. 6 in all for year 30-4-1910	8%	Tls. 72
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	36,000	Tls. 100	Tls. 100	b Tls. 697,257 r Tls. 50,000 e Tls. 125,000	....	..	Interim of Tls. 3 for 1910	7	Tls. 100 sellers
LANDS, HOTELS AND BUILDINGS.											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 35,000	Tls. 4,314	29-2-09	Tls. 6 for year ending 29-2-10	5¾	Tls. 97 sellers
Central Stores, Ld.	—	$751,845	16) 50,123	$15	$15	n. $1,000	$1,000	31-12-08	8% for 1909	...	$12½ sellers
Hongkong Hotel Co., Ld.	1866	$600,000 $400,000	12,000 8,000	$50 $50	$50 $25	$648,975 r $20,000	$21,477	30-6-10	$3 on old shares, $1.50 on new shares, for half year ending 30-6-10	5½%	$97 sellers $70 sales
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	$27,971	31-12-09	Interim of 3½ for 1910	7%	$98½ buyers
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $226,945 20) $25,856	$5,471	31-12-09	45 cents for 1909	5¾%	$7 sellers
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$269	31-12-09	$2½ for 1909	8%	$33 buyers
Shanghai Land Investment Co., Ld.	1888	Tls. 3,900,000	78,000	Tls. 50	Tls. 50	Tls. 1,523,045 e Tls. 300,000	Tls. 63,969	31-12-09	Interim of Tls. 3 for 1910	6¾	Tls. 110 sales
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,958	31-10-09	Interim of $1.80 for 1910	8¾	$39 sellers
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 250,000	Tls. 10,991	31-10-09	Tls. 11 for year ended 31-10-09	8¼	Tls. 90 sellers
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	e 20,000	$26,297	30-7-09	50 cents for year ending 31-7-08	—	$3½ buyers

FAR EASTERN STOCKS AND QUOTATIONS—(CONTINUED.)

STOCK.	WHEN ESTABLISHED	CAPITAL.	NO. OF SHARES.	VALUE	PAID UP.	RESERVE	AT WORKING ACCOUNT.	DATE.	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.	CLOSING QUOTATIONS
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 175,000	Tls. 8,372	30-9-09	Tls. 7½ for year end. 30-9-09 (10%)	10%	Tls. 46
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	8,000	Tls. 100	Tls. 100	none	Tls. 4,829	31-12-08	Tls. 6 for 1909	10%	Tls. 48½
Soy Chee Cotton Spinning Co., Ld	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	f Tls. 31,173	Tls. 31,173		Tls. 35 for 1909	17%	Tls. 245
MISCELLANEOUS											
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377.10s.	11) 8,604	12/6	12/6	£1,500	£797	31-12-09	15% for 1909		$8 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	$40,000	Nil.	31-12-08	5% for 1909	6½	$9 sellers
China Light & Power Co., Ld. Do. do. Special Shares	1901 1907	$300,000	50,000 17) 50,000	$5 $1	$5 $1	none	$50,242	31-7-10	60 cents for year ending 28-2-06		95 cts. buyers
China Provident Loan & Mortgage Co., Ld.	1898	a $1,250,000	7) 125,000	$10	$10	$80,000	$2,602	31-12-09	80 cents for 1909	10%	$7 buyers
Dairy Farm Co., Ld.	1896	$300,000	40,000	$7½	$6	l $10,000 $10,000	$1,850	31-7-09	$1.20 for year ending 31-7-09	%	$17½
Green Island Cement Co., Ld.	1897	$4,000,000	400,000	$10	$10	$14,000	$4,290	31-12-09	Interim of 15 cts. per share for 1910	15	$3 buyers
H. Price & Co., Ld	1907	$120,000	19) 15,000	$10	$10	none	$1,923.87	31-12-09	14% viz $1.40 for 1909	12%	$12
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$11,798	28-2-10	A dividend of $1.20 per share and a bonus of 10 cts. per share for year end. 28-2-10.	6½	$20
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	$25	k $150,000	$12,662	31-12-09	Interim of $2 pershare for 1910	....	$120 buyers
Hongkong Rope Manufacturing Co., Ld.	1883	$600,000	$60,000	$10	$10	$40,000	$9,176	31-12-09	Interim of $1 per share for 1910	9	$18 sellerss
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	25,000	Glds. 10	Glds. 10	21 Tls. 547,500 Tls. 547,500 f Tls. 63,914	Tls. 316,682	31-12-08	3rd Interim Div. of Tls. 15 making in all Tls. 37½ for 1910	5	Tls. 100
Peak Tramways Co., Ld. Do. (New)	1907	$750,000	25,000 50,000	$10 $10	$10 $10	$20,000	$3,014	30-4-10	80 cents on fully paid shares & 8 cents on $1 paid shares for year ending 30-4-10	5½ 5	$13 sellers $1½ sellers
Philippine Co., Ld.	1904	$750,000	75,000	$10	$10	none	Ps. 2,875	31-12-09	None	....	$8
Robinson Piano Co., Ltd.	1900	$200,000	22) 4 000	$50	$50	$5,000	$61,138	31-8-08	6% for ½ year ending 30.9.07	....	$50
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 w Tls. 100,000	Tls. 5,250	31-10-08	No dividend this year	2	Tls. 102½
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	Dr. $31,096	31-8-09	None	....	$25
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	$127,86	31-5-10	50 cents for year ending 30-5-10	8	$5½ buyers
Union Waterboat Co., Ltd.	1905	$500,000	15) 50,000	$10	$10	w $11,956	..	31-12-08	60 cents for year-end. 31-12-1908	6½	$6½ b. and sales
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$46,000	$471	31-5-10	15% per ordinary share for year ended 31-5-10	5	$11½ sellers
Watkins, Ltd.	1899	$100,000	10,000	$10	$10	none	$19,41	31-12-09	3½ for 1909		$3 sellers
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	e) $300,000 $25,000	$1,776	31-12-09	3% for 1909	....	$6
Weismann Limited	1904	$30,000	3,000	$10	$10	$12,250	$67	31-7-10	10 per cent for year endg. 31.7.10.	10%	$12 buyers
William Powell, Ld.	1901	$105,000	15,000	$7	$7	none	$782	30-6-09	30 cents making 80 cents for year ending June 30th 1906	....	$2½
Societe des Pulpes et Papeteries du Tonkin		660,000	13,200	50 Haiphong	35 Currency	....	..	....	First year	....	$36 (Hk.Cy.) sel
RUBBERS											
Allagar Rubber Estates, Ltd.	1909	£85,000	29) 750,000	2/-	2/-	....	....	....	....	....	5/-
Anglo-Malay Rubber Co., Ltd.	1905	£150.000	1,500,000	2/-	2/-	....	....	....	25% interim	....	24
Balgownie Rubber Estate, Ltd.	1905	†† $200,000	‡‡ 20,000	†† $1	†† $1	$7,400	$11,205	31-3-09	40% interim	....	$10¾ [Singapore]
Castlefield Rub. Ld., [fully pd.]	1906	£35,000	27) 32,650	£1	£1	none	....	....	....	....	119
Damansara (Selangor) Rub. Co.	1906	£110,000	25 110,000	£1	£1	nil.	£2,220	31-12-08	50% for 1909	....	152/6
Golconda Malay Rubber Co.	1907	£80 000	26 80,000	£1	£1	nil.	nil.	....	25% interim	....	102/6
Highland & Lnd. Para R. Co. Do. Do. [fully paid] Do. Do. [partly paid]	1906	£310,000	=181,454 123,546	£1 £1	£1 15/-	£8,784	....	....	35% for 1909	....	107/6
Kamuning (Perak) Rb. & Tin Co. do do A Shares do do B Shares	1909	£200,000	950,000 105,000	2/- £1	1/- £1	nil.	nil.	....	....	....	5/- prem.
Kuala Lumpur Rubber Co., Ltd.	1906	£180,000	180,000	£1	£1	£4,000	1,82	....	75% interim	....	165/-
Linggi Plantations, Ltd. (ord.) Do. Do. (7% pref.)	1895 Reconst	£100,000	×900,000 10,000	2/- £1	2/- £1	....	....	....	150% interim 7% for 1909	....	47/3
Ledbury Rubber Estates Ltd. Do. Do. (contrib.)	1908	£125,000	§§ 60,000 §§ 40,000	£1 £1	£1 7/6	....	....	....	17½% for 1909	....	65/-
Sagga Rubber Co. Ld.	1903	£20,000	24) 2,000	£1	£1	nil.	nil.	....	25% interim	....	270/-
Sandycroft Rubber Co.	1904	$100,000	50,000	$2	$2	$20,000	$1,275	31.1.08	100% interim	....	$26
Sekong Rubber Co., Ld	1908	£80,000	27) 80,000	£1	12/6	nil.	nil.	....	....	....	11/3 prem.
Shelford Rubber State Ld.	1906	£65,000	65,000	£1	£1	nil.	£836	31.12.08	7½% for 1909	....	73/9
Singapore & Johore Rb. Co., Ld.	1903	$250,000	2,500	$2	$2	nil.	nil.	....	25% interim	....	$13
Sungei Choh. Rb. State Co., Ld.	1907	£45,000	45,000	£1	£1	nil.	nil.	....	....	....	92/6
Sungei Kapar Rubber Co.	1906	£110,000	23) 110,000	£1	£1	nil.	£3,448	31.12.08	37½% for 1909	....	14/-
Toerangie Rubber Co.	1910	30) £100,000	51,000	£1	7/6	....	....	....	First year	....	par.

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE.	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E.	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par. Plus interest
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡	Hongkong & Shanghai Banking Corporation.	$750,000	$500	§ all	Half yearly, June 30th and December 31st	par. Plus interest
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902	Hongkong & Shanghai Banking Corporation.	Tls. 543,900	Tls. 100	....	Half yearly, June 30th and December 31st	Tls. 103½ Plus interest
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903	Hongkong & Shanghai Banking Corporation.	Tls. 500,000	Tls. 100	....	Half yearly, January 1st and July 1st	102½ Plus interest
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par. Plus interest
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	||	Half yearly, March 31st and Sept. 30th	Tls. 97½. Plus interest

a Authorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange and Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repair Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 4,000 shares unissued.
2 First issue of 60,000, of which 10,411 unallotted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unallotted.
6 1,616 shares unallotted.
7 75,000 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 40,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 399 shares unissued.
15 22,277 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 50,000.00.
19 12,000 issued only.
20 Typhoon and Floods Insurance Fund.
21 Special Cash Reserve.
22 1000 shares unissued.
23 10,000 shares unissued.
24 4595 part paid shares.
25 7,500 shares unissued.
26 10,000 shares unissued.
27 2.350 shares unissued.
28 25,000 shares unissued.
29 10,000 shares unissued.
30) 3,700 fully paid vendor shares and an option of 5,000 shares at par for 5 years granted to option holders.
*Based on last year's dividend.
** Based on present dividend.
§ 216 held by the Company.
|| Only Tls. 134,000 taken up.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Comp., the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 95.
*** Redeemable at par on 30th June, 1915.
Dr. Deficit.
†† Singapore dollars.
‡‡ 4,880 shares unissued.
× 16,756 shares unissued.
§§ 25,000 shares unissued.
4140 shares unissued.

ADDITIONAL SHANGHAI SHARE QUOTATIONS

December 30, 1910

STOCK	CLOSING QUOTATIONS	HIGHEST AND LOWEST PRICES DURING THE WEEK	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	LAST DIVIDEND	WHEN PAID
Vulcan Iron Works, Limited....	Tls. 10		Tls. 500,000	1,000	Tls. 500	Tls. 500	—	Tls. 50 for year ended 31.8.06......	Nov. 1, 1906
Yangtsze Wharf & Godown Co. Limited........................	Tls. 195		Tls. 250,000	2,500	Tls. 100	Tls. 100	Tls. 50,000	Tls. 15 for 1909........................	April 1, 1910
Wei-hai-wei Land & Building Co., Limited....................	Tls. 8 nominal		Tls. 91,850	3,674	Tls. 25	Tls. 25	—	Interim of $2.00 for 1909............	Aug. 8, 1909
Anglo-German Brewing Co., Limited...........................	$80 sellers		$100,000	4,000	$100	$100	none	5% for 1909	Mar. 12, 1910
Butler Tile Works, Limited	Tls. 23		Tls. 60,000	1,200	Tls. 50	Tls. 50	—	Tls. 3 for year ending 31.3.09......	June 8, 1909
Major Bros., Limited	Tls. 40		Tls. 300,000	6,000	Tls. 50	Tls. 50	—	——	—
Oriental Ice Company, Limited	Tls. 25		Tls. 130,000	2,600	Tls. 50	Tls. 50	—	First year	—
Scharffs Oil and Bone Mills, Ltd .	Tls. 40		Tls. 200,000	4,000	Tls. 50	Tls. 50	—	First year	—
Shanghai Ice Company, Limited.	Tls. 13		Tls. 200,000	8,000	Tls. 25		—	6 for 1909..............................	Mar. 14, 1910
Dunning & Company, Limited..	$33 sales		$100,000	2,000	$50	$50	—	$5 year ending 28.2.08......	Apr. 15, 1908
J. Llewellyn & Co., Limited	$60 nominal		$72,000	1,200	$60	$60	—	7.20 for 1909	May 1, 1910
Lane, Crawford & Company	$120		$250,000	2,500	$100	$100	—	10% for year 1909....................	Apr. 28, 1910
S. Moutrie & Company, Limited.	$20		$250,000	5,000	$50	$50	—	$2 for year ended March 31, 1909.	June 18, 1909
Weeks & Company, Limited ...	$23		$400,000	20,000	$20	$20	$40,000	Final of 6% making 10% for 1909..	June 1, 1910
Dominion Rubber Co., Limited.	Tls. 30		Tls. 225,000	22,500	Tls. 10	Tls. 4	—	First year..............................	—
Senawang Rubber Estates Company, Limited.................	Tls. 50		Tls. 250,000	2,500	Tls. 100 Tls. 100	Tls. 100 Tls. 75	—	20% for year ending May 31 1910 ...	May 9, 1910
Tebong Rubber and Tapioca Estate, Limited..................	Tls. 20		£76,000	76,000	£1	£1	—	50 cents for 1909........................	Sept 2, 1910
Shanghai Mercury, Limited	Tls. 55		Tls. 105,500	2,100	Tls. 50	Tls. 50	—	Final of 6% making 16% year 1909.	June 22, 1910
Shanghai Mutual Telephone Co., Limited.........................	Tls. 64		Tls. 675,000	13,500	Tls. 50	Tls. 50	—	Tls. 3 for 1907..........................	June 28, 1909
China Export, Import & Lumber Company, Limited	Tls. 75 sales		Tls. 350,000	500	Tls. 100	Tls. 50	—	5 p. c. for 1909.........................	May 1, 1910
China Printing Co., Limited.....	Tls. 50		Tls. 750,000	1,500	Tls. 50	Tls. 50	—	7% 1908...................................	Apr. 18, 1909
Hirano Mineral Water Co., Ltd.	Y. 10		Y. 125,000	5,000	Y. 25	Y. 25	—	10%=yen 2½ for year ending 30th Sept. 08 Y. 1.20 for year ended Feb. 29..................	Apr. 26, 1909
Shanghai Electric & Asbestos Company, Limited.............	$21 sellers		$125,000	5,000	$25	$25	—	8% for year ended Feb. 28, 09....	June 21, 1909
Shanghai Electric Construction Company, Limited	£6¦5	£11	£320,000	32,000	£10	£10	—	First year.................................	—

DEBENTURES

LOANS		PRICE—PLUS ACCRUED INTEREST	AMOUNT OF LOAN	OUTSTANDING	NOMINAL VALUE	RATE OF INTEREST	WHEN PAYABLE
Shanghai Municipal Debentures	1892	Tls. 97	Tls. 45,400	Tls. 45,400	Tls. 100	5 %	June & Dec.
do	1893	,, 100	,, 46,200	" 32,000	" 100	5½ ,,	Do
do	1894	,, 106	,, 60,000	" 60,000	" 100	6 ,,	Do
do	1895	,, 97	,, 107,600	" 32,600	" 100	5 ,,	Do
do	1896	,, 97	,, 117,300	" 131,800	" 100	5 ,,	Do
do	1897	,, 97	,, 268,400	" 268,400	" 100	5 ,,	Do
do	1898	,, 106	,, 60,000	" 60,000	" 100	6 ,,	Do
do	1900	,, 100	,, 81,700	" 81,700	" 100	5½ ,,	Do
do	1901	,, 106	,, 77,000	" 200,000	" 100	6 ,,	Do
do	1902	,, 106	,, 145,000	" 150,000	" 100	6 ,,	Do
do	1903	,, 106	,, 430,500	" 490,500	" 100	6 ,,	Do
do	1904	,, 106	,, 164,500	" 214,500	" 100	6 ,,	Do
do	1905	,, 106	,, 255,900	" 820,000	" 100	6 ,,	Do
do	1907	,, 106	,, 500,000	" 250,000	" 100	6 ,,	Do
do	1908	,, 250 scarce	,, 650,000	" 354,400	" 250	6 ,,	Do
do	1909	,, 97½	,, 300,000	" 250,000	" 100	6 ,,	Do
Chinese Imperial Government Loan	1886 E	,, 102½	,, 354,400	"	" 100	7 ,,	Mar. & Sept
Shanghai Land Investment Co., Debentures...............	1892	,, 95	,, 250,000	" 250,000	" 100	6 ,,	May & Nov.
do	1894	,, 104	,, 250,000	" 250,000	" 100	6 ,,	Mar. & Sept.
do	1896	,, 104	,, 250,000	" 250,000	" 100	5 ,,	June & Dec.
do	1900	,, 95	,, 250,000	" 250,000	" 100	6 ,,	April & Oct.
do	1901	,, 104	,, 250,000	" 100,000	" 100	6 ,,	June & Dec.
do	1901	,, 104	,, 100,000	" 400,000	" 100	5 ,,	May & Nov.
do	1902	,, 104	,, 400,000	" 250,000	" 100	6 ,,	June & Dec.
do	1905	,, 104	,, 250,000	" 815,900	" 100	6 ,,	Do
Shanghai Waterworks Co., Debentures.................	1909	,, 104	,, 865,900	"	" 100	6 ,,	April & Oct.
Shanghai Gas Co., Debentures	1909	,, 106	,, 775,000	" 800,000	" 100	5 ,,	Do
Shanghai and Hongkew Wharf Co., Debentures	1902	,, 105 scarce	,, 1,000,000	" 799,800	" 100	6 ,,	June & Dec.
Astor House Co., Debentures..............................	1905	,, 100	,, 750,000	" 500,000	" 100	7 ,,	Do
British Municipal Council, Hankow.......................	1901	Sh. ,, 100	H'kow Tls 100,000	H'kow Tls 100,000	" 100	7 ,,	June & Dec.
Shanghai Club Debentures	1907	,, 100	Tls. 170,000	Tls. 170,000	" 100	6 ,,	Do
Country Club Debentures		,, 102½	,, 139,000	" 139,000	" 100	6 ,,	Do
do	1907	,, 102	,, 92,000	" 92,000	" 100	6 ,,	Do
Lane Crawford & Co., Debentures.........................	1907	,, 105	,, 110,000	" 110,000	" 100	7 ,,	Mar. & Sept.
Anglo-French Land Debentures.........................	1908	,, 102	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
Central Stores Ltd. Debentures...........................	1908	,, 102½	,, 250,000	" 250,000	" 100	8 ,,	Do
Shanghai Mutual Tel. Co. Debentures	1909	,, 102½	,, 200,000	" 200,000	" 100	6 ,,	Do

SINGAPORE SHARE QUOTATIONS

(Courtesy Messrs. Fraser & Co., Brokers, Singapore, December 30, 1910)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers.
								MINING		
1903	$300,000	300,000	30,000	10	10	......	10% interim	Belat Tin Mining Co., Ltd.	4.10	4.25
1907	$300,000	225,000	22,500	10	10	......	....	Bruang Ltd.	6.25	6.75
1901	$600,000	600,000	60,000	10	10	25,000	6% for year ending 30-4-09	Bruseh Hydraulic Tin Mining Co., Ltd.	....	5.00
1907	$400,000	375,000	37,500	10	10	......	....	Kanaboi, Ltd.	1.75	2.00
1901	£60,000	60,000	60,000	1	1	......	6¦- interim 1910	Kinta Tin Mines, Ltd.	16.00	16.50
1905	$150,000	99,000	9,900	10	10	6,485.68	35% for year ending 31-12-07	Kuantan Tin Mining Co., Ltd.	2.00	3.00
1906	£120,000	120,000	120,000	1	1	......	1¦- interim 1909.	Lahat Mines Ltd.	8.50	9.25
1906	$450,000	450,000	45,000	10	10	......	....	Malacca Tin Dredging Co., Ltd.	....	1.50
1906	£30,000	30,000	30,000	1	1	......	....	Malaya and Siam Corporation Ltd.	....	7¦6
1906	£250,000	179,500	500,000	5/-	5/-	......	....	Pahang Consolidated Co., Ltd.	4¦6	5¦6
1907	£100,000	80,000	80,000	1	1	......	....	Pengkalen. Ltd.	4.00	4.50
1904	£100,000	80,000	80,000	1	1	......	6¦- interim	Pusing Bahru Tin Mines, Ltd	7.00	7.50
1904	£120,000	100,000	100,000	1	1	6,000	6¦- interim	Pusing Lama Tin Mines, Ltd.	2.00	2.50
1907	$450,000	300,000	30,000	10	10	......	....	Rahman Hydraulic Tin, Ltd.	10.00	10.50
1905	£40,000	£40,00	40,000	1	1	......	....	Rahman Tin Co., Ltd.	11.00	12.00
1905	£27,000	27,000	27,000	1	1	......	1¦- for 1907	Rambutan, Ltd.	....	9.00
1892	£200,000	200,000	200,000	1	1	4,873	1¦2 paid April, 1910	Raub Aust. Gold Ming. Co., Ltd,	2.00	2.50
1905	£40,000	40,000	40,000	1	1	......	....	Redhills Tin Mining Co., Ltd.	2.00	3.00
1900	$110,000	110,000	22,000	5	5	......	3% for year ending 22-1-09.	Royal Johore Tin Mining Co., Ltd.	....	1.25
1907	$550,900	500,000	50,000	10	10	......	....	Salak South, Ltd.	....	3.00
1907	£80,000	80,000	80,000	1	1	......	....	Sempam Tin Mines, Ltd.	1.00	1.50
1906	$850,000	850,000	85,000	10	10	25,000	5% interim 1910	Serendah Hydraulic Tin Ming. Co., Ltd.	4.00	5.00
1899	$230,000	230,000	23,000	10	10	......	3% for ½ year ending 31-12-08	Sipiau Tin Co., Ltd.	1.50	2.00
1909	$200,000	$150,000	15,000	10	10	......	....	Sungei Gau Tin Mining Co., Ltd.	....	3.00
1907	£90,000	70,000	70,000	1	1	......	6¦- during 1910	Tekka, Limited.	20.00	21.00
1906	£150,000	150,000	150,000	1	1	......	1¦- interim 1909	Tongkah Harbour Tin Dredging Co., Ltd.	....	12.50
1902	£160,000	160,000	160,000	1	1	......	7¦- during 1910	Tronoh Mines. Ltd.	15.25	16.00

SINGAPORE SHARE QUOTATIONS.—(Continued.)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers.
								STERLING RUBBER		
1909	£85,000	78,225	782,250	2/-	2/-	......		Allagar Rubber Estates, Ltd	4/8	5/-
1905	£150,000	150,000	1,500,000	2/-	2/-	......	25% interim	Anglo-Malay Rub. Co., Ltd.	1.2.3	1.3.6
1909	£50,000	47,000	470,000	2/-	2/-	......		Batang Malaka Rubber Estates, Ltd.	2/9	3/-
1904	£30,000	26,750	26,750	1	1	......	35% interim	Batu Caves Rub. Co., Ltd.	17.0.0	17.10.0
1906	£80,000	67,800	67,800 l^*	1	1	......	2½% for 1909	Batu Tiga (Selangor) Rubber Co., Ltd.	4.15.0	5.0.0
1909	£100,000	74,454	57,816	1	1	......	6½% for 18 months ending 30-6-10	Bukit Kajang Rubber Estates, Ltd	2.9.0	2.10.0
			22,184 n^*	1	15/-	......	" " " " "	" " " part paid	1.10.0	1.15.0p.
1907	£30,000	25,500	24,000	1	1	......	30% for year ending 30-6-10	Bukit Lintang Rubber Estates, Ltd.	4.11.3	5.0.0
			6,000	1	5/-	......		" " " part paid	2.2.6	2.7.6p.
1903	£70,000	66,700	66,700	1	1	2,000	25% interim	Bukit Rajah Rubber Co., Ltd.	15.10.0	16.0.0
1906	£35,000	35,000	35,000	1	1	......		Castlefield (K.) R. Estate, Ltd.	5.18.9	6.5.0
1909	£225,000	176,086	1,760,860	2/-	2/-	......		Chersonese (F.M.S.) Estates, Ltd	3/6	3/9
1904	£16,000	16,000	100,000	2/-	2/-	......	50% interim	Cicely Rubber Estates Co., Ltd.	2.0.0	2.5.0
			60,000	2/-	2/-	......	51½% interim	" " " " 5% Pref	2.0.0	2.5.0
1905	£75,000	62,007	620,070	2/-	2/-	1,000	50% interim	Consolidated Malay Rub. Estates, Ltd.	1.2.6	1.3.6
1906	£110,000	110,000	110,000	1	1	......	50% interim for 1910	Damansara (Selangor) Rubber Co., Ltd.	7.5.0	7.12.6
1903	£600,000	447,200	447,200 a	1	1	......		Duff Development Co., Ltd	11/6	12/6
1909	£45,000	42,500	425,000	2/-	2/-	......	15% interim	Edinburgh Rub. Estates, (Selangor) Ld.	10/6	11/6
1907	£80,000	70,000	70,000	1	1	......	25% interim	Golconda Rubber Co., Ltd.	5.5.0	5.15.0
1906	£310,000	307,770	307,770	1	1	8,784	10% interim	Highlands & Lowds. Para Rub. Co., Ltd.	5.1.3	5.5.0
1904	£50,000	30,000	30,000	1	1	2,500	100% for year ending 30-6-10	Inch Kenneth Rubber Estates, Ltd	13.10.0	14.0.0
1909	£200,000	143,750	775,000 p	2/-	1/-	......	15% for eleven monhts end. 30-6-10	Kam. (P.) R. & T. Co., Ltd. "A" Shares	4/3	4/9 p.
			105,000	1	1	......	" " " " "	" " " "B" "	....	nom.
1905	£70,000	70,000	70,000	1	1	......	20% interim	Kapar Para Rubber Estates, Co., Ltd	8.17.6	9.3.6
1909	£35,000	£17,250	95,000	2/-	2/-	......		Kota Tinggi Johore Rubber Co., Ltd.	....	2/-
			155,000	2/-	1/-	......		" " " "	0/1	0/6 p.
1906	£180,000	180,000	180,000	1	1	.....	75% interim	Kuala Lumpur Rubber Co., Ltd	7.17.6	8.5.0
1907	£100,000	100,000	1,000,000	2/-	2/	......	30% interim	Labu (F. M. S.) Rub. Co., Ltd.	15/-	16/-
1907	£320,000	£252,067/10/-	198,930 v	1	1	3,000	10% interim	Lanadron Rubber Estates, Ltd.	4.18.6	5.2.6
			70,850	1	15/-	......	10% interim	" " " part paid	3.12.6	4.2.6p.
1908	£125,000	75,000	60,000 g^*	1	1	......	10% interim	Ledbury Rubber Estates Ltd.	3.7.6	3.10.0
			40,000	1	7/6	......	10% interim	" " " part paid	1.15.0	1.17.6p.
1895	£100,000	98,324 8/-	883,244 w	2/-	2/-	4,000	150% interim	Linggi Plantations Ltd.,	2.5.3	2.6.3
			10,000	1	1	......	7% for 1909	" " " 7% Pref	....	nom.
1907	£160,000	140,000	1,400,000 k	2/-	2/-	......	10% interim	London Asiatic R. & Produce Co., Ltd.	12/-	13/-
1909	£220,000	147,500	50,000	1	1	.....		Lumut Rubber Estates, Ltd.	....	nom.
			150,000	1	3/-	.....		" " " " part paid	16/3	17/3 p.
1906	£400,000	300,000	185,000	1	1	......	10% interim for 1909	Malacca Rubber Plants., Ltd.	7.10.0	8.0.0
			115,000	1	1	.....	" " "	" " " " " 7½% Pref.	7.10.0	8.0.0
1909	£210,000	181,250	1,812,500	2/-	2/-	......		Merlimau Rubber Estates, Ltd.	5/3	5/9
1903	£30,000	22,500	225,000	2/-	2/-	......	75% interim	Pataling Rubber Estates Synd. Ltd	2.17.6	3.0.0
1906	£85,000	85,000	850,000	2/-	2/-	......	12½% interim	Perak Rubber Plantations, Ltd	7/6	8/-
1909	£60,000	41,150	15,000 z^*	1	1	......		Rembia Rubber Estates Ltd.	....	nom.
			35,000	1	15/-	......		" " " 6% Cum. Pref.	6/-	7/- p.
1904	£25,000	19,092	17,732 u	1	1	......	50% for year ending 30-9-10	Sagga Rubber Company, Limited	11.10.0	12.0.0
			2,268	1	12/-					
1905	£100,000	100,000	71,378 / 28,622 $l‡$	1	1	.....		Sapong Rubber and Tobacco Estates, Ltd.	1.4.0	1.5.0
1907	£100,000	100,000	100,000	1	1	......	15% interim	Seafield Rubber Co., Ltd	7.2.6	7.10.0
1898	£30,000	30,000	300,000	2/-	2/-	3,000	225% interim	Selangor Rubber Co., Ltd	3.1.3	3.3.3
1909	£50,000	36,000	40,000	1	18/-	......		Sendayan (F. M. S.) Rubber Co., Ltd	1.6.3	1.10.0p.
1906	£65,000	65,000	65,000	1	1	......	10% interim	Shelford Rubber Estate, Ltd	3.11.3	3.15.0
1909	£150,000	78,500	14,000 $i‡$	1	1	......		Sialang Rubber Estates, Ltd	1.0.0	1.2.6p.
			86,000	1	15/-	......				
1909	£120,000	100,000	100,000	1	1	......	12½% for year ending 31-6-10.	Singapore Para Rubber Estates, Ltd.	2.15.0	3.0.0
1906	£200,000	192,500	1,925,000	2/-	2/-	......	17½% for year ending 31-3-10	Straits Settlements (B.) Rub. Co., Ltd	6/7½	6/10
1907	£60,000	50,000	50,000 $p‡$	1	1	.....		Sungei Choh Rub. Estate, Co.Ltd.	4.0.0	4.7.6
1906	£110,000	100,000	1,000,000	2/-	2/-	......	25% interim	Sungei Kapar Rubber Co., Ltd	12/6	13/6
1907	£70,000	60,500	60,500	1	1	......		Sungei Salak Rubber Co., Ltd	4.2.6	4.7.6
1904	£60,000	59,500	59,500	1	1	......	12½% interim.	Sungei Way (Selangor) Rub. Co., Ltd	6.0.0	6.5.0
1908	£150,000	100,560	100,560	1	1	......		Tebrau (Johore) Rubber Co	3.7.6	3.12.6
1907	£200,000	200,000	200,000	1	1	......	5% interim	United Serdang (S.) R. Plantations, Ltd.	5.10.0	6.0.0
1908	£85,000	78,612	786,120	2/-	2/-	.....	20% interim	United Sumatra Rubber Estates, Ltd.	7/9	8/3
1904	£60,000	50,600	506,000	2/-	2/-	.....	75% interim	Vallambrosa Rubber Co., Ltd.	1.15.3	1.17.6
								DOLLAR		
1909	$120,000	105,000	105,000 w^*	1	1	......		Alor Gajah Rubber Estate, Ltd	1.75	2.00
1909	$750,000	700,000	140,000	5	5	....		Ayer Panas Rubber Estates, Ltd	5.80	6.15
1905	$200,000	151,200	151,200	1	1	5,250	40% interim	Balgownie Rub. Estate, Ltd	10.50	11.00
1910	$500,000	500,000	50,000	10	10	......		Bukit Timah Rubber Estates, Ltd	13.50	14.50
1910	$750,000	700,000	70,000	10	10	......		Changkat Serdang Estates, Ltd	7.75	8.00
1909	$300,000	300,000	300,000	1	1	.....		Glenealy Plantations, Ltd	1.80	2.00
1910	$200,000	164,285	32,857 $m‡$	5	5	......		Haytor Rubber States, Ltd	5.50	7.50
1910	$600,000	180,000	30,000	10	7	......		Henrietta Estates, Ltd.	....	1 dis.
1909	$250,000	200,000	20,000	10	10	......		Indragiri (S.) R. and Gutta P. Co., Ltd.	13.00	14.00
1910	$350,000	300,000	300,000 $s‡$	1	1	.....		Jimah Rubber Estates, Ltd	0.50	0.60
1910	$350,000	291,000	11,000	5	5	......		Kelemak Rubber Estate, Ltd	3.50	4.00
			59,000	5	4	......		" " " part paid	2.00	1.50 dis.
1907	$300,000	170,000	20,000	10	8.50	....		Kombok Rubber Co., Ltd	15.00	prem.
1910	$1,000,000	1,000,000	500,000	2	2	......		Malakoff Rubber Co., Ltd.	2.25	2.40
1910	$1,250,000	1,250,000	250,000	5	5	......		New Singapore Rubber Co., Ltd.	6.50	7.00
1910	$700,000	600,000	600,090 $q‡$	1	1	......		Nyalas Rubber Estates	0.40	0.50
1909	$400,000	400,000	80,000	5	5	......	5% interim	Pajam Limited	11.75	12.25
1909	$200,000	200,000	200,000	1	1	......		Pantai, Limited	1.15	1.30
1909	$500,000	450,000	45,000	10	10	......	17½% for year ending 31-8-10	Pegoh, Limited	30.00	30.50
1910	$450,000	295,000	45,000 $f‡$	5	5	.....		Port Dickson Rubber Co., Ltd	10.00	12.00
			35,000	5	2	.....		" " " part paid	2.00	3.00 p.
1910	$5,000,000	3,675,000	360,000	10	2	.....		Pulau Bulang Rub. & Produce Co., Ltd.	1.75	1.85
			7,500	10	10	.....		" " " " "	....	....
1910	$200,000	150,000	50,000	1	1	.....		Pulo Daat Plantations, Ltd.	0.75	1.00
1904	$100,000	100,000	50,000	2	2	20,000	100% interim	Sandycroft Rubber Co., Ltd	24.50	25.50
1910	$1,500,000	1,500,000	1,500,000	1	1	......		Sembawang Rubber Plantations, Ltd.	0.55	0.60
1903	$450,000	417,300	208,650	2	2	......	25% interim	Singapore & Johore Rub. Co., Ltd	12.00	12.25
1909	$250,000	100,000	10,000	10	10	.....		St. Helena Rubber Coy., Ltd.	....	28.00
1910	$600,000	450,000	225,000 $n‡$	2	2	.....		Sungei Bagan Rubber Co., Ltd.	1.30	1.60
1909	$200,000	165,000	33,000	5	5	......		Teluk Anson Rubber Estate, Ltd.	4.60	4.85
1910	$425,000	371,700	371,700 $r‡$	1	1	.....		Ulu Pandan (Singapore) Rub. Estates Ltd.	0.50	0.60
1909	$1,000,000	737,500	737,500 y^*	1	1	.....		United Singapore Rubber Estates, Ltd.	1.25	1.35
								GENERAL		
1903	£400,000	400,000	400,000	1	1	......		Singapore Electric Tramways, Co., Ltd.	3/3	4/3
1907	$1,500,000	1,065,150	25,000 d^*	10	10	......	10% for year ending 31/12/08	Eastern Smelting Co. Ltd.	....	10.00 n.
			116,450	10	7	......	10% for year ending 31-12-08	" " " part paid	....	6.00 n.
1898	$360,000	360,000	36,000	10	10	170,000	10% interim	Fraser & Neave, Ltd.	25.50	26.50
1905	$2,400,000	2,400,000	18,000	100	....	75,000	2½% for year ending 31-10-08	Howarth Erskine, Ltd.	....	56.00
			6,000	100	....	......	7% for year ending 31-10-08	" " 7% Pref	....	91.00
1896	$1,000,000	1,000,000	6,000	100	100	40,600	12% for year ending 31-12-09	Katz Brothers, Ltd. Deferred	....	125.00
			4,000	100	100	......	8% " " " " 09	" " 8% Cum. Pref	....	nom.
1901	$34,000	34,000	3,400	10	10	......	20% for year ending 31-10-09	Maynard & Co., Ltd.	20.00	23.00
1899	$875,000	875,000	6,000	100	100	175,000	5% for year ending 31/12/09	Riley, Hargreaves & Co., Ltd	85.00	87.50
			2,750	100	100	......	7% for year ending 31/12/09	" " " " 7% Pref	102.00	....
1897	£3,500,000	3,500,000	2,500,000	1	1	1,120,000	22½% for 1909	Shell Transport and Trading Co., Ltd	3.19.00	4.2.6
			100,000	10	10	......		" " " " " Pref.	11.5.0	12.0.0
1903	$600,000	250,000	25,000 n	10	10	.....	12½% for year ending 30-6-10	Singapore Cold Storage Co., Ltd	22.50	23.00
1891	$30,000	30,000	600	50	50	23,000	10% for year ending 31-7-09	Singapore Dispensary Ltd.	50.00	52.50
1884	$200,000	200,000	2,000	100	100	75,000	15% interim	Straits Ice Co., Ltd	....	165.00
1890	$1,000,000	623,000	4,980	100	100	760,000 q	5% interim	Straits Steam Ship Co., Ltd.	215.00	225.00
			2,500	100	50			" " " " " part paid	65.00	prem.
1887	$3,000,000	3,000,000	300,000	10	10	805,400 r / 1,400,000	10% & 5% bon. for half yr. end. 31/3/10	Straits Trading Co., Ltd	51.50	55.00
								DEBENTURES		
								Howarth Erskine, Ltd. 6% $600,000	....	par.
								Riley, Hargreaves & Co., Ltd. 6% 284,000	1%	3% p.
								Singapore Electric Tramways, Co., Ltd. 5% £350,000	....	....
								Singapore Municipal 5% 1,878,000	....	nom.
								" " 4½% of 1907 1,600,000	6%	7% p.
								" " 4½% of 1909 1,000,000	7%	8% p.
								" " 4% 602,000	....	7% dis.

a { 152,800 unissued; 43,949 6% debenture
e { 54,500 £1 Prefs issued; 45,500 £1 " unissued; 100,000 5/- Ord. "
f 6,250 unissued
k £40,000 6% Debentures 200,000 unissued

p 175,000 unisd "A" shares
q Sundry Reserves.
r "
u 5,000 issued £1 prem.
v 50,220 unissued
w 16,756 "
b^* 221 7½% Debentures
d^* 8,550 unissued

g^* 25,000 unissued
l^* £10,000 Convertible 6% Debentures issued 12,200 shares unissued
n^* 20,000 unissued
y^* 262,500 "
z^* 10,000 "
$i‡$ 50,000 "

$l‡$ 6% Deb. Stock Convble.
$m‡$ 7,143 unissued.
$n‡$ 75,000 unissued.
$o‡$ 67,750 "
$p‡$ 10,000 "
$q‡$ 100,000 "
$r‡$ 53,300 "
$s‡$ 50,000 "

YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, DECEMBER 28, 1910.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
Brett & Co., Ltd.	-Y- 28,000	2,800	-Y- 10	-Y- 10	31-12-09	12½%	for 1 year	15 Sellers
Club Hotel, Ltd.	185,000	1,850	100	100	31-3-10	6%	for 1 year	70 Sales
Grand Hotel, Ltd.	500,000	5,000	100	100	31-6-10	5%	for ½ year	90 Sellers.
Helm Bros., Ltd.	186,000	3,720	50	50	31-12-10	17½%	for 1 year	95 Sales.
Langfeldt & Co., Ltd.	100,000	2,000	50	50	30-6-09	6%	for ½ year	60 Sellers.
C. Nickel & Co., Ltd. †	500,000	20,000	25	25	31-10-09	20%	for 1 year	57 Sales.
Thwaites, Limited	100,000	2,000	50	50	First Year	—	—	55 Sales.
Yokohama Engine and Iron Works *	500,000	10,000	50	50	31-5-09	—	for 1 year	35 Sales.
Oriental Hotel, Ltd., Ordinary }	250,000	3,000	50	50	31-8-07	12%	for 1 year	50 Sales
Oriental Hotel, Ltd., Preference }		2,000	50	50		8%	for 1 year	52:50 Sales
The Union Estate and Investment Co., Ltd. ‡	1,000,000	10,000	100	100	30-9-09	7%	for 1 year	100 Nominal.
The Clifford Wilkinson Tansan Mineral Water Co., Ltd. §	500,000	5,000	100	100	31-12-09	7%	for 1 year	100 Buyers.

† 285,000 unissued.
‡ 475,000 unissued.
*-Y- 390,000 issued.
§-Y- 375,800 issued.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Brett & Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	95 Sales.
Yokohama United Club	230,000.00	100.00	6%	30 June and 31 Dec.	102 Nominal.
Oriental Hotel, Limited	350,000.00	100.00	8%	1 April and 1 Oct.	103 Sales.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	95 Sellers.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	LAST DIVIDEND.	DIVIDEND PAYABLE.	CLOSING QUOTATION.
Bonds & Debentures.					
Exchequer Bonds 3rd issue	-Y-100	-Y-100	5%	March and Sept.	-Y-101.00
Railway Bonds (Ko-Gobu)	100	100	5%	June and Dec.	,, 99.40
4% Imperial Loan Bonds (1st issue)	100	100	4%	June and Dec.	,, 93.45
4% Imperial Loan Bonds (2nd issue)	100	100	4%	March and Sept.	,, 94.30
Special 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 99.30
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 101.50
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 103.80
Osaka City Harbour Construction Bonds	100	100	6%	June and Dec.	,, 101.00
Osaka City Public Loan Bonds	100	100	6%	June and Dec.	,, 101.00
Kawasaki Dock Yards Co.'s Debentures	100	100	7%	June and Dec.	,, 104.00
Tokyo Race Associations "	500	500	30%	June and Dec.	,, 190.00
Railways & Electric Trams.					
Tokyo Railway Company, Limited	50	50	5 2/5%	June and Dec.	,, 71.95
Yokohama Electric Tramway Company, Limited	50	50	6%	July and Jan.	,, 53.00
Keihin Electric Tramway Company, Limited	50	50	6%	June and Dec.	,, 43.05
Southern Manchurian Railway Co., Ltd.	100	20	6%	June and Dec.	,, 43.50
Hanshin Electric Tramway Co., Ltd.	50	50	12%	May and Nov.	,, 118.00
Cotton Spinnings.					
Kanegafuchi Cotton Spinning Company, Limited	50	50	14%	July and Jan.	,, 106.95
Fuji Gassed-yarn Company, Limited	50	50	14%	June and Dec.	,, 85.40
Tokyo Cotton Spinning Company, Limited	50	50	8%	July and Jan.	,, 44.00
Imperial Hemp Weaving Company, Limited	50	50	12%	July and Jan.	,, 71.95
Nisshin Boseki Kabushiki Kaisha	50	17½	7%	June and Dec.	,, 11.85
Sugar & Beer Cos.					
Dai-nippon Sugar Refinery Company, Limited	50	50	....	May and Nov.	,, 42.00
Ensuiko Sugar Refinery Company, Limited	50	20	20%	June and Dec.	,, 45.50
Dai-nippon Beer Company, Limited	50	50	12%	July and Jan.	,, 81.60
Kirin Brewery Company, Limited	50	50	7%	July and Jan.	,, 52.50
Docks & Steamships.					
Yokohama Dock Company, Limited	50	33	12%	June and Dec.	,, 60.00
Uraga Dock Company, Limited	50	50	....	July and Jan.	,, 6.50
Kawasaki Dockyard Company, Limited	50	50	12½%	Feb. and Aug.	,, 54.00
Nippon Yusen Kaisha	50	50	10%	May and Nov.	,, 96.30
Hokkaido Tanko S. S. Company, Limited	50	50	5%	July and Jan.	,, 29.00
Miscellaneous.					
Tokyo Electric Light Company, Limited	50	50	12%	June and Dec.	,, 82.80
Tokyo Gas Company, Limited	50	50	13%	July and Jan.	, 102.60
Yokohama Union Electric Light Company, Limited	50	50	14%	June and Dec.	,, 107.50
Fuji Paper Mills	50	50	6%	June and Dec.	,, 30.50
Otaru Timber Company, Limited	50	50	....	March and Sept.	,, 33.00
Hoden Petroleum Company, Limited	50	50	20%	April and Oct.	,, 57.40
Tokyo Rope Manufacturing Company, Limited	50	50	18%	June and Dec.	,, 104½ Ex. Dividend.
Japan Horse Improvement Company, Limited	50	50	....	March and Sept.	,, 13.50
Tokyo Stock Exchange Company	50	50	15 1/5%	June and Dec.	,, 180.30
Osaka Electric Light Company, Limited	50	50	16%	July and Jan.	,, 103.50
Kobe Electric Light Company, Limited	50	50	14%	July and Jan.	,, 112.00

BANGKOK SHARE QUOTATIONS

(COURTESY MESSRS. EDWARDS & CO., BANGKOK, SIAM.) DECEMBER 28, 1910

NAME.	BUYERS.	SELLERS.	LAST SALES.	ESTABLISHED.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND	LAST DIVIDEND
Siam Electricity Co., Ltd.	Tcs. 300	Tcs. 325	Tcs. 325	1901	£ 300,000	30,000	£ 10—	£ 300,000	Tcs. 491.338	12% Tcs. 4 bon.
Paknam Railway Co., Ltd	,, 200	,, —	,, 220	1893	Tcs. 400,000	5,000	Tcs. 80	Tcs. 400,000	,, [illegible]7,566	14%
Siam Tramway Co., Ltd	,, —	,, —	,, 108	1905	,, 1,450,000	6250 Shares 7250 Deb. 1000 P. Shares	,, 100	,, 2,230,000	,, 1,875	—
Meklong Railway Co., Ltd	,, 90	,, 100	,, 90	1907	,, 2,230,000	22,300	,, 100	,, 223,000	,, 28.000	5%
Bangkok Manufact. Co., Ltd.	,, —	,, —	,, 132	1898	,, 400.000	4.000	,, 100	,, 400.000	,, 60,000	7% per for 6 months
Bangkok Dock Co., Ltd	,, —	,, 135	,, 135	1865	,, 1,000.000	10,000	,, 100	,, 950,000	,, 220.000	
Siam Steam Packet Co.	,, 80	,, 909	,, 90	1898	,, 190 000	3,800	,, 50	,, 190,000	,, 34,000	5%
Siam Commercial Bank	,, 1,000	,, 1,500	,, 1,000	1906	,, 3,000,000	3,000	,, 1,000	,, 3,000 000	,, 338,850	4% for 6 mos.
Menam Motor Boat Co.	,, 75	,, 90	,, 90	1905	,, 200.000	2,000	,, 100	,, 200,000	—	none
Transport Co., Motor	,, —	,, 75	,, 100	1906	,, 200.000	2,000	,, 100	,, 200,000	—	—
Jenderata Rubber Co.*	,, —	,, 325— Ticals	,, 325 (for six calls)	1906	£ 40,000	4,000	£ 10	£ 7.-paid	—	—
Bagan Rubber Co.	,, —	,, 100	,, 100	1907	Tcs. 300,000	3,000	Tcs. 100	Tcs. 40 per share	—	—
Siam Steam Navigation Co., Ltd.	,, 300	,, 325	,, —	1909	,, 2,000 000	10,000	,, 200	—	,, 10,000	—
Siam Stone Works, Ltd.	,, —	,, —	100	1909	,, 350,000	3.500	,, 100	,, 350,000	—	6% half year
Kombok Rubber Co.	,, 25	,, 85	32	1906	$ 300,000	30,000	$ 100	$7, per Share	—	—

PHILIPPINE SHARE REPORT

COURTESY B. A. GREEN, GENERAL SHARE, BOND AND INVESTMENT BROKER.—*Manila, P. I., December 10, 1910.*

Name	Closing Quot'n	When Incorporated	Authorized Capital	Issue Value of Shares	Number of Shares	Number of Shares Subscribed	Paid up	Reserve Fund	Working Account	Date	Last Dividend
American Drug Store	....	1908	₱ 100,000	₱1,000	100	51	₱1,000	₱5,000	₱ 50,000	June 30, 1910.	....
Antamok Valley Mining Co	₱0.40	1909	500,000	1	500,000	320,000	1	.... .	....	....	First year
Banco Español Filipino	₱255.	1851	3,000,000	200	15,000	12,980	200	408,715	....	July 1, 1910.	5% First Half 1910
Bayhay Valley Oil Co	100.	1909	100,000	100	1,000	....	100	......	.. ....	....	First year
Benguet Commercial Co	85.	1908	200,000	100	2,000	736	100	......	....	....	8% for 1906
Benguet Consolidated Mining Co	0.50	1903	2,000,000	2	1,000,000	495,000	2	......	....	....	....
Bua Mining Co.											
Common	90.	1905	750,000	100	7,000	3,366	100	......	....	....	....
Preferred	140.			100	500	500	100	......	....	....	....
Cadwallader-Gibson Lumber Co	....	1908	1,000,000	100	10,000	8,650	100	......	....	....	....
Camote-Clayton Mining Co	....	1909	400,000	10	40,000	26,000	10	......	....	....	First year
Compania Maritima	50.	1894	510,000	100	5,100	5,100	100	......	....	....	20% for 1902
East Batan Coal Mining Co	33.	1909	3,000,000	50	60,000	40,000	50	......	....	....	First year
El Varadero de Manila	75.	1885	450,000	100	4,500	4,500	100	288,955	134,715	Aug. 31, 1910	3½% interim 1910
Electrical Supply Co	....	1909	100,000	100	1,000	280	72	......	....	....	First year
Export & Import Lumber Co	....	1908	200,000	200	1,000	1,000	200	......	....	....	....
Escolta Press Inc	100.	1907	50,000	100	500	320	100	......	....	....	12% for 1909
Fabrica de Hielo de Manila	60.	1894	350,000	50	7,000	7,000	50	......	....	....	9% interim for 1910
Germinal Cigar Factory	525.	1900	1,500,000	500	3,000	3,000	500	......	....	....	12% for 1909
H. E. Heacock & Co	....	1909	100,000	100	1,000	800	100	......	....	....	First Year
Headwaters Mining Co	10.	1908	600,000	10	60,000	59,800	10	......	....	....	....
Insular Lumber Co	140.	1907	2,000,000	200	10,000	9,000	200	......	....	....	....
Lepanto Mining Co	....	1906	1,000,000	100	10,000	8,000	100	......	....	....	....
Juan Seiboth Co	....	1908	150,000	20	7,500	500	20	......	....	....	....
La Concha Button Factory	90.	1905	75,000	100	750	530	100	......	....	....	15% for 1909
Los Banos Improvement Co	200.	1908	100,000	200	500	500	200	......	....	....	16% for 1908
Lambert, Springer Co	....	1908	200,000	1,000	200	80	1,000	......	....	....	....
Luzon Stevedoring Co	25.	1909	250,000	25	10,000	4,200	25	......	....	....	....
Luzon Sugar Refining Co	....18.	1882	700,000	100	7,000	7,000	100	......	....	....	3% for 1907
Manila Electric Ry. & Light Co	140.	1903	12,000,000	200	60,000	....	200	......	....	....	4% for 1909
Manila Hotel Co	100.	1909	400,000	100	4,000	3,500	100	......	....	....	Under Construction
Mindanao Herald Publishing Co	....	1907	15,000	100	150	75	100	......	....	....	½% for 1908
Muyot Mining Co	3.	1909	500,000	10	50,000	....	10	......	....	....	First Year
Paracale Gold Dredging Co	15.	1907	£10,000	£1	10,000	10,000	£1	......	....	....	£1 for 1908–9
Paracale Ext. Gold Dredging Co	10.	1909	₱450,000	₱10	45,000	....	₱10	......	....	....	First Year
Philippine Publishing Co	120.	1907	600,000	200	3,000	2,187	200	......	....	....	10% interim for 1910.
Philippine Co., Ltd	5.	1904	750,000	10	75,000	75,000	10	......	....	....	....
Philippine Gold Dredging Co	10.	1907	200,000	10	20,000	20,000	10	......	....	....	....
Philippine Exploration Co	10.00	1908	2,000,000	10	200,000	120,000	10	......	....	....	....
Port Banga Lumber Co	....	1908	100,000	100	1,000	934	100	......	40,000	Oct 1, 1910.	....
Rosenstock Publishing Co	....	1908	75,000	10	7,500	6,000	10	......	....	....	....
San Nicolas Iron Works	100.	1901	300,000	500	600	600	500	......	....	....	15% for 1903
San Mauricio Gold Mining Co	35.	1908	4,000,000	200	20,000	20,000	200	......	....	....	....
Sanitary Steam Laundry	22.	1908	100,000	20	5,000	3,900	20	......	....	....	....
Tarlac Railway Co	65.	1906	150,000	100	1,500	1,500	100	......	....	....	....
Tumbaga Mining Co	13.	1909	1,000,000	40	25,000	24,125	40	......	....	....	First Year
Union Hemp Machine Co	....	1909	50,000	10	5,000	2,600	10	......	....	....	First Year
Walter E. Olsen Co	100.	1909	500,000	100	5,000	2,033	100	......	....	....	First Year
Zamboanga Cold Storage Co	125.	1903	40,000	100	400	200	100	......	....	....	20% for 1909

PHILIPPINE BONDS

	Dated	Authorized	Issued	Outstanding	Par Value	Rate of Int.	When payable	Last Quotation
Philippine Friar Land Bonds	Feb. 1st, 1904	$7,000,000	$7,000 000	$7,000,000	$ 100	4%	Feb. 1, 1914	104[illegible]
Public Works and Permanent Improvement Bonds	March 1, 1905	$5,000,000	$2,500,000	$2,500,000	$ 100	4%	March 1, 1915	104[illegible]
Do.	Feb. 1, 1906	....	$1.000,000	$1,000,000	$ 100	4%	Feb. 1, 1916	104[illegible]
Manila Sewer and Water Works Improvement Bonds	June 1, 1905	$4,000,000	$1,000,000	$1,000,000	$ 100	4%	June 1, 1915	104[illegible]
Do.	Jan. 2, 1907	....	$2,000,000	$2,000,000	$ 100	4%	Jan. 2, 1917	104[illegible]
Philippine Railway First Mortgage Four per cent Thirty Year Sinking Fund Gold Bonds	July 1, 1907	$15,000,000	$5,736,000	$5,736,000	$1000	4%	July 1, 1937	97
B. P. O. Elks. First Mortgage 7% Five-Fifteen Year Sinking Fund Gold Bonds	July 1, 1908	$75,000	$75,000	$75,000	$ 50	7	July 1, 1923	50½

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American Bridge Co. 56
American Manchurian S. S. Co. 57
American Steel and Wire Co. 57
Anderson & Co., Wm. H. 41
Anderson, Meyer & Co. 30
Arnhold Karberg & Co. 20
Astor House Hotel Co. 55
Baldwin Locomotive Works 32-51
Banco Español Filipino .... Cover
Bell, David W. 19
Bohler Bros & Co. 64
British American Tobacco Co., Ltd. 85
Cadwallader-Gibson Lumber Co. 23
California-Manila Lumber Co. 21
Carmichael & Clarke 10
Chaflin Co., The H. B. 61
Chee Hsin Cement Co., Ltd. 42
China Import Export Lumber Co. 45
China Merchants Steam Nav. Co. 38
China Mutual Life Insurance Co. 43
China and Manila S. S. Co. 31
Chinese Eng. & Mining Co. .... Cover
Chinese Eastern Railway 16
Cia. General de Tabacos Filipinas. 36
Cia. Trasatlantica 36
Clarke, M. A. 44
Commercial Press, Ltd. 70-71
Cook's Sons, Adam 61
Defiance Machine Works 20
Derham Bros 23
Detroit Engine Works 29
Deutsch-Asiatische Bank 1
Dickeson, Jones & Co. 43
Dollar, Co., The Robert 39
Earnshaw, M & Co., Inc. 7
East Asiatic Dredging Co. 27
Easterbook Allcond & Co. 58
Eastern Engineering Co. 5
Electrical Supply Co. Inc. 60
Export and Import Lumber Co. 23
Fearon, Daniel & Co. 13-30
Fairbanks Morse & Co. 64
Ferro Machine & Foundry Co. 29
Fox Typewriter 33
Fressel, C. & Co. 24
Fushun Coal 3
Gardner Governor Co. 32
General Electric Co. 21
Germann & Co., Ltd. 28
Germinal Cigar Factory 35
Gordon & Co. 4
Grand Rapids Gas Engine & Yacht Co. 29
Gray Motor Co. 29
Green Island Cement Co., Ltd. 40
Greilsammer Bros. 24
Han-yeh-Ping Iron & Coal Co. Ltd. 73
Hanyang Iron & Steel Works 61
Harvey, Stuart S. 45
Herbrand & Co., P. 58
Hongkong Rope Mfg. Co., Ltd. 31
Hongkong & Shanghai Banking Corp. .... Cover
Hongkong & Whampoa Dock Co., Ltd. 10
Honolulu Iron Works Co. 60
Hotel St. Francis 65
Hupeh Cement Co. 42
Imperial Hotel, Ltd. 52
Imperial Railways of China 17-69-70-71
International Correspondence Schools 13
International Cold Stores, Ltd. 41
International Banking Corp. .... Cover
Jardine, Matheson & Co. 25
Johnson-Pickett Rope Co. 10
Kawasaki Dockyard Co. Ltd. 7
Kiangnan Dock & Engineering Works 8
La Parisien Carriage Factory 34
La Prueba 37
Lambert-Springer Co. 60
Lodge & Shipley Machine Tool Co. 27
Malthoid 74
Melchers & Co. 52-58
Middleton & Co. Ltd. 43
Michigan Steel Boat Co. 62
Mitsu Bishi Dockyard & Eng. Works 6
Mitsui Bussan Kaisha 5-47
Morse & Son, A. J. 150
Murray, Wilbur H. Mfg. Co. 34
New Metropole Hotel 52
New Engineering and Shipbuilding Works, Ltd. 11
New York Engineering Co. 58
Nicholson, C. S. 6
Nippon Yusen Kaisha 39
North British Locomotive Co. Ltd. 49
Olsen & Co., Walter E. .... Cover
Pacific Mail S. S. Co. 37
Pacific Tank and Pipe Co. 74
Paraffine Paint Co. 62
Philippine Islands 2
Port Banga Lumber Co. 24
Racine, Ackermann & Co. 41
Remington Typewriter Co. 83
Rose, Downs & Thompson, Ltd. 46
Russo Asiatic Bank 1
San Miguel Brewery 4
Santa Mesa Rope Works 13
Schuchardt & Schütte, Berlin 33
Shanghai Dock & Eng. Co., Ltd. 12
Shanghai Electric and Asbestos Co., Ltd. 46
Shanghai Gas Co., Ltd. 28
Shanghai Nanking Railway 15
Shanghai Machine Co. 26
Shanghai Waterworks Co. Ltd. 50
Shewan, Tomes & Co. 48
Siemens China Electrical Engineering Co. 18
Siemssen & Co. 22
Southern Pacific Co. 25
South Manchuria Railway Mining Dept. 3
South Manchuria Railway 14
Standard Oil Co. of New York 66-67-68
Stevenson & Co., Ltd., W. F. 10
Strong, Frank L. 45
Superior Wrench Co. 29
Swift & Co. 32
Taikoo Dockyard and Engineering Company of Hongkong, Ltd. 9
Thompson F. H. 61
Toyo Kisen Kaisha 37
Truscott Boat Mfg. Co. 50
Trussed Concrete Steel Co. 33
Tsingtauer Werft 46
United States Steel Products Export Co. 51-56-57
Vander Loo & Co. F. A. 81
Vulcan Iron Works 34
Vulcan Iron Works Ltd. 13
Warner Barnes & Co., Ltd. 8
Wen Ming Press 26
White & Co. (Inc.). J. G. 62
Western Electric Co. 60
Westinghouse Brake Co., Ltd. 59
Wood Waste Distilleries Co. 43
Woosung Car Shops 53
W. T. Henley's Telegraph Work Co., Ltd. 18
Ynchausti & Co. 27
Yokohama Specie Bank 1
Young, C. G. 149
Zimmerman Steel Co. 62

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THE FAR EASTERN REVIEW

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His Excellency General YIN-CHANG
President of the Board of Army Affairs.

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Cebu's New Water Supply System

General News and Comment

Commercial Commission from Central West to Visit Orient

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COMMERCE FINANCE

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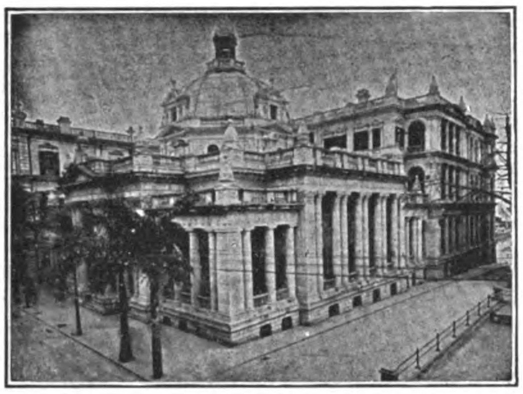

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THE FAR EASTERN REVIEW

COMMERCE • ENGINEERING • FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, DECEMBER, 1910 No. 7.

THE PHILIPPINE HAT INDUSTRY

A feature of industrial training, which is characterizing the program of the Department of Public Instruction in the Philippines, is the training of the youth of the Philippines to a greater efficiency in household industries which predominate as a source of livelihood among a large portion of the provincial population. Among these industries hat weaving has been given a place, and in order to proceed wisely and effectively the Director of the Bureau of Education has made a thorough investigation into the present status of the industry throughout the islands and accumulated a volume of data of inestimable value in pushing his educational campaign. As a result we have received a copy of a recent bulletin by Mr. Hugo H. Miller, of the Philippine School of Commerce, which fully covers the history of hat weaving and represents not only careful examination of statistics, but the result of personal investigation covering a period of four years in every section of the islands where this industry may be said to engage even minimum attention. The bulletin is effectively illustrated and through the courtesy of Director Frank R. White we reproduce the plates in this issue.

THE WEAVING OF A PHILIPPINE HAT

In his introduction Director White says:

"The Bureau of Education has introduced hat weaving as a prescribed exercise in the primary schools. This is a household industry capable of great development in the Philippines through the agency of the schools. Many raw materials admirably adapted for use in the weaving of hats are widely distributed over the Islands, and others now narrowly localized can be given general distribution. A growing market exists in the United States and Europe, which will accept all the product the Philippines can possibly supply. The local market is demanding constantly a larger output and a higher-grade article. The Bureau of Education considers it one of its legitimate functions to give such training in the making of good hats as will afford a larger number of children a permanent means of earning a livelihood.

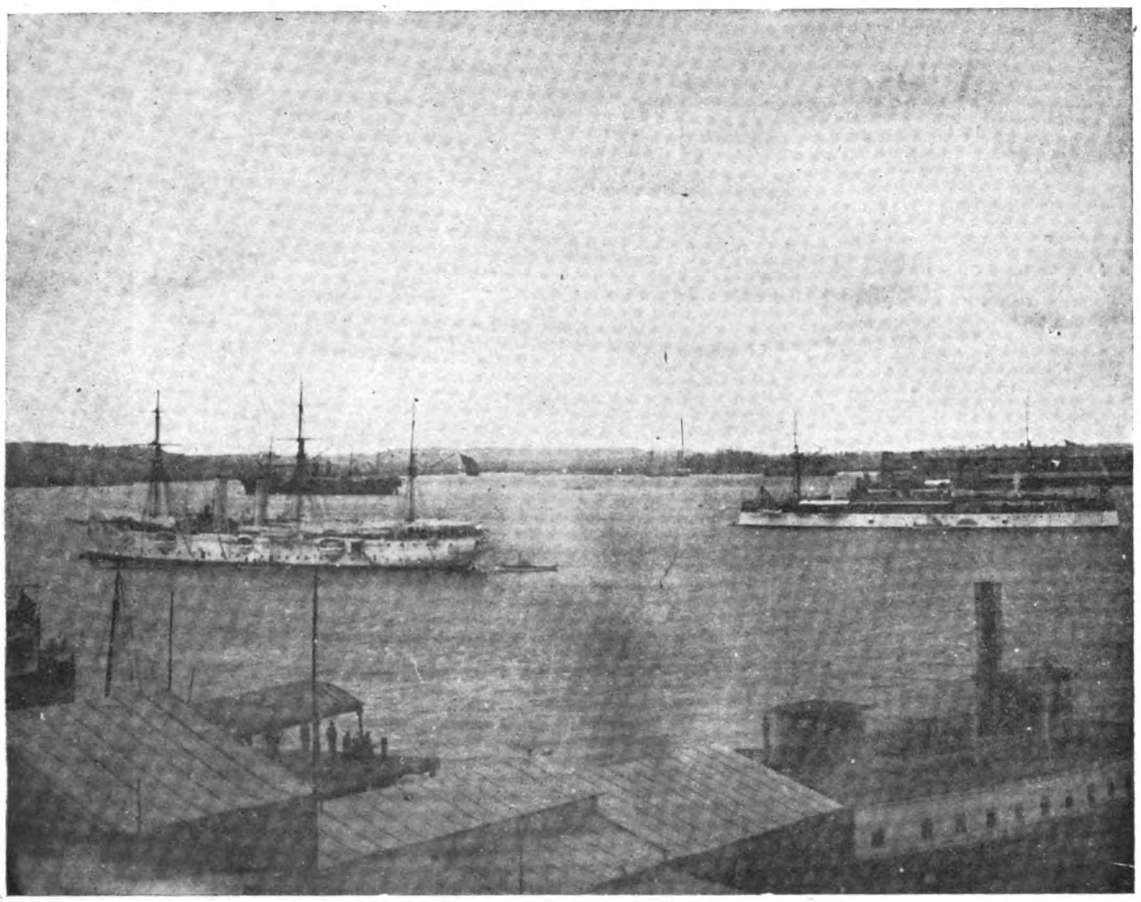
"As indicative of the development which is possible for this industry in the Philippines, it may be noted that in the fiscal year 1910 621,375 hats were exported from the Islands, and 189,190 of these went to the United States. These figures represent a very small fraction of the proportions which the hat industry may assume when the Islands are ready to supply the growing demands which are being made for Philippine hats in the world markets.

"This report covers a new field. Hat making, like most other minor industries in the Philippines, has never before been the subject of any serious investigation. Mr. Hugo H. Miller, of the Philippine School of Commerce, has here compiled an extensive and reliable body of information. This material has taken four years in its preparation, and has been gathered from students, weavers, hat brokers, exporters, and supervising and industrial teachers throughout the Islands by correspondence and conversation, and personal investigation in hat-producing towns. Upon technical details Mr. Miller has had the assistance of Mr. U. S. Andes, principal of the industrial department, Philippine Normal School."

Present State of Philippine Industries.—Before taking up the subject in detail Mr. Millar gives a comprehensive idea of the present status of this important industry and says:

"A considerable source of revenue to provincial households is found in the domestic industries carried on for the most part by the women assisted by the men and children, sometimes in their spare moments, more often as regular employment. The system as carried on to-day in the Philippines bears very close resemblance to that followed in England and on the Continent in the eighteenth century before the industrial revolution, the introduction of machinery and the application of steam and other power to it. and the factory

Supplement to
THE FAR EASTERN REVIEW
February Nineteen Hundred and Eleven

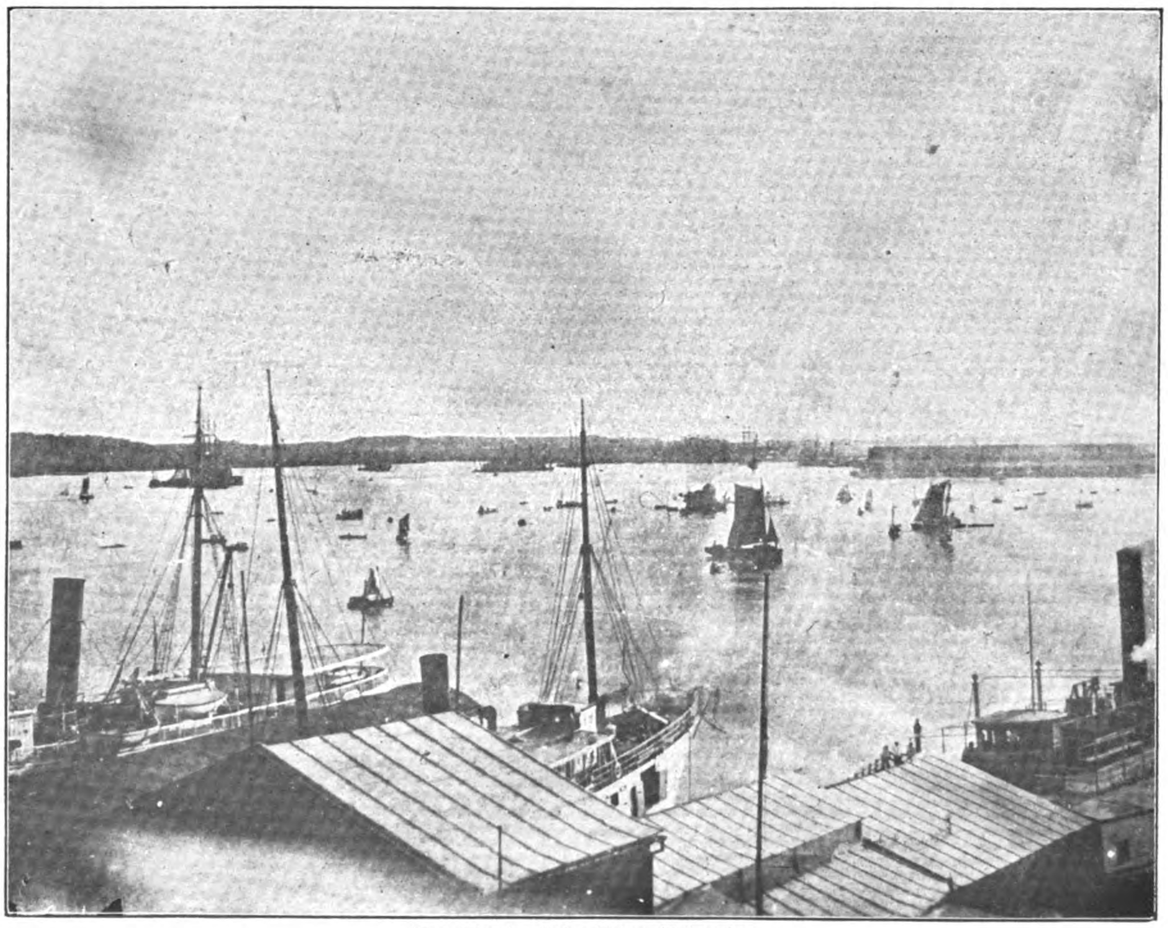


The Spanish Cruiser *Alfonso XII* The U. S. Battleship *Maine*

Havana Harbor
The Morning
of February 15th
1898

The Morning
of the 16th

From Original Photos
Taken by the Writer
from the Roof
of the Hotel Mascotte



The Wreck of the *Maine* still burning

THE FAR EASTERN REVIEW

COMMERCE • ENGINEERING • FINANCE

VOL. IX. MANILA, P. I., SHANGHAI, AND YOKOHAMA, FEBRUARY, 1911 No. 8.

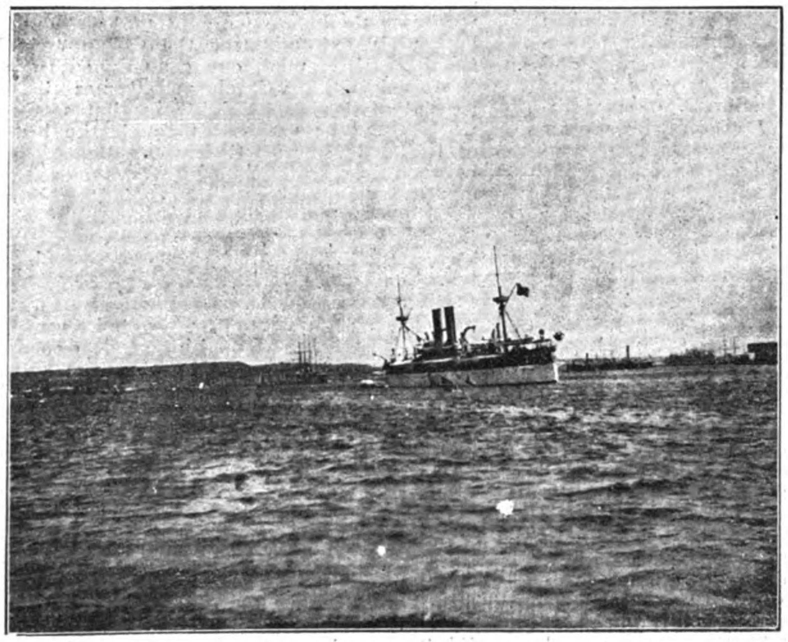
THE *MAINE*: THIRTEEN YEARS AFTER

A TALE OF TWO CORRESPONDENTS

A TRIBUTE TO ONE OF THEM FROM THE OTHER

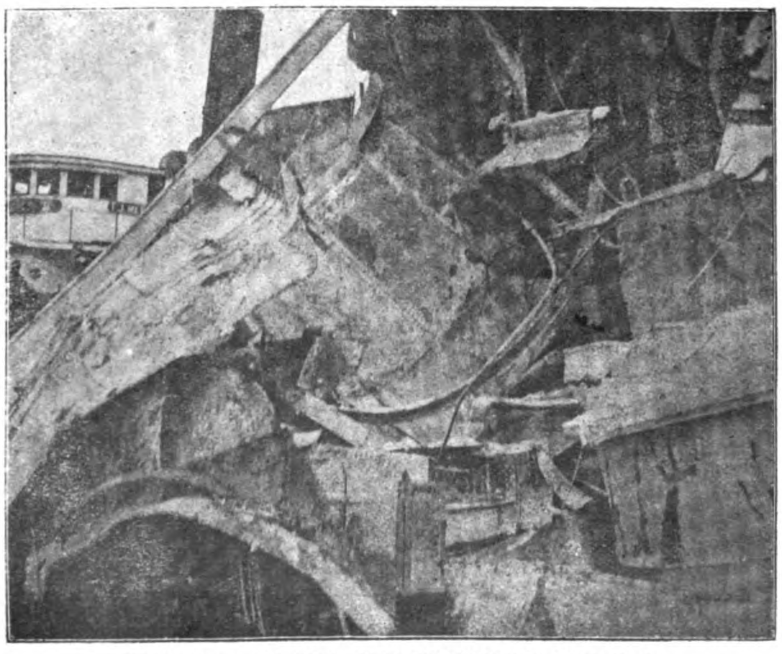
Foreword.

The story of the Maine has been told and retold, and little remains to be added to Captain Sigsbee's final word on the sinking of his ship, published two years ago. There is only one obscure point that requires explanation, and that is the persistent story that the Maine's officers were on shore the night of the disaster, enjoying themselves. This story is still given some credence in the United States, while no contradiction can shake the Spaniard's belief in its veracity. Captain Sigsbee wrote with some feeling on this point, and briefly explained that there was a seeming basis for the belief, being cognizant of the facts herein related. The personal movements of correspondents, serving their papers in war time, are not published as news, and modesty forbids writing

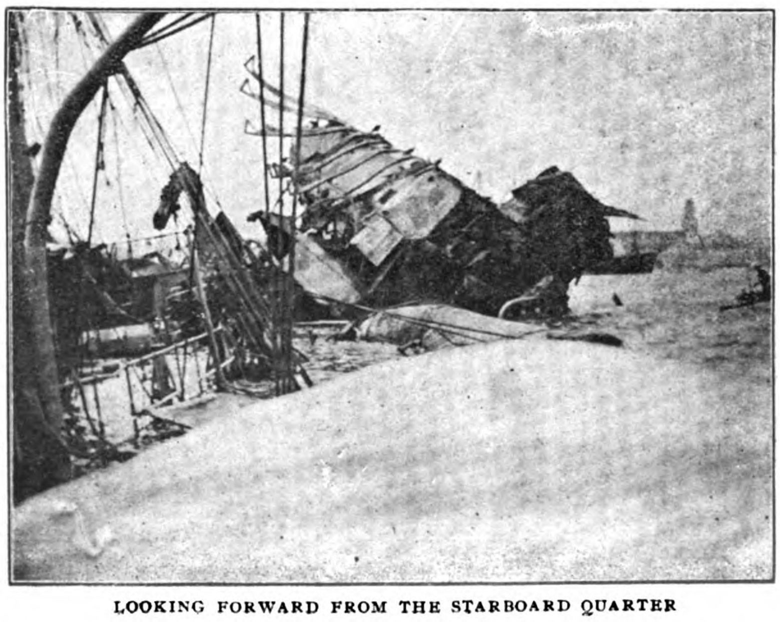


THE MAINE IN HABANA HARBOR

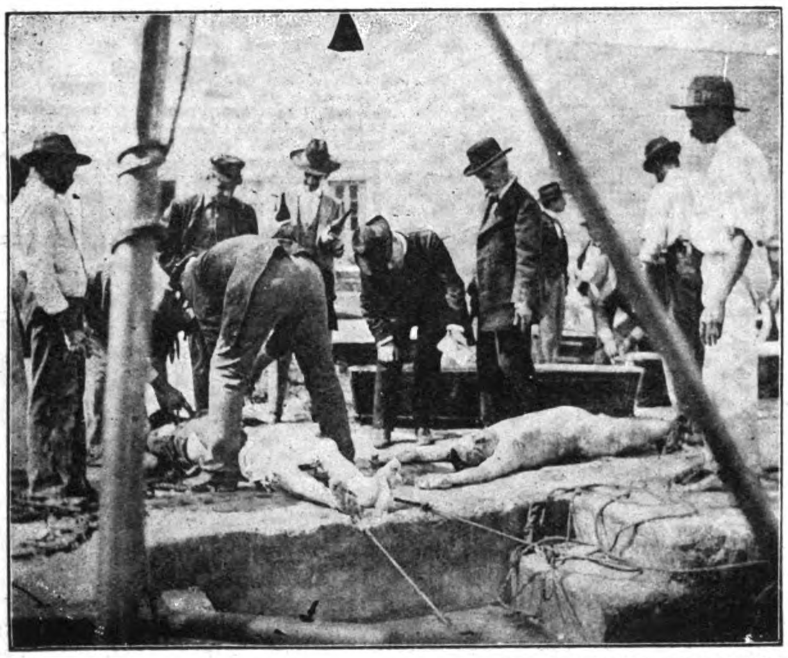
THE SPANISH AND AMERICAN DIVERS' BOATS

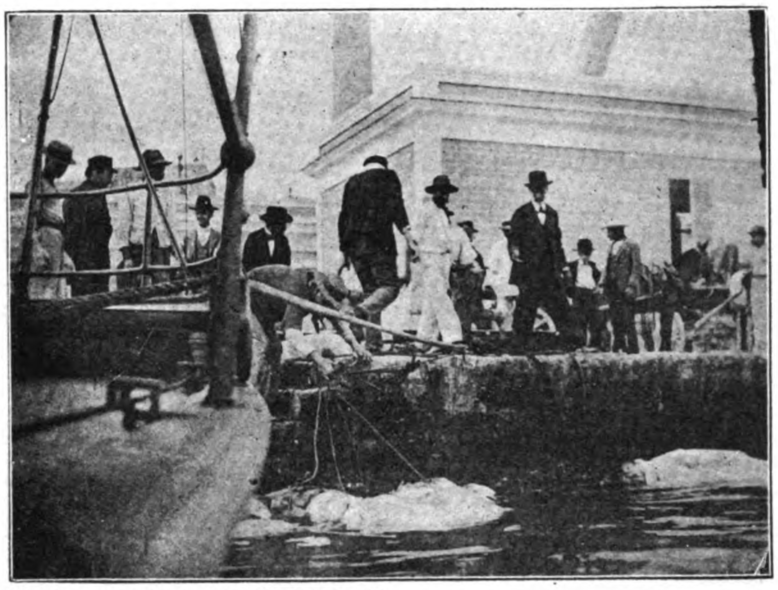


LOOKING INTO THE MASS OF TWISTED WRECKAGE



LOOKING FORWARD FROM THE STARBOARD QUARTER





RECOVERING AND IDENTIFYING THE MANGLED BODIES AT THE MACHINA

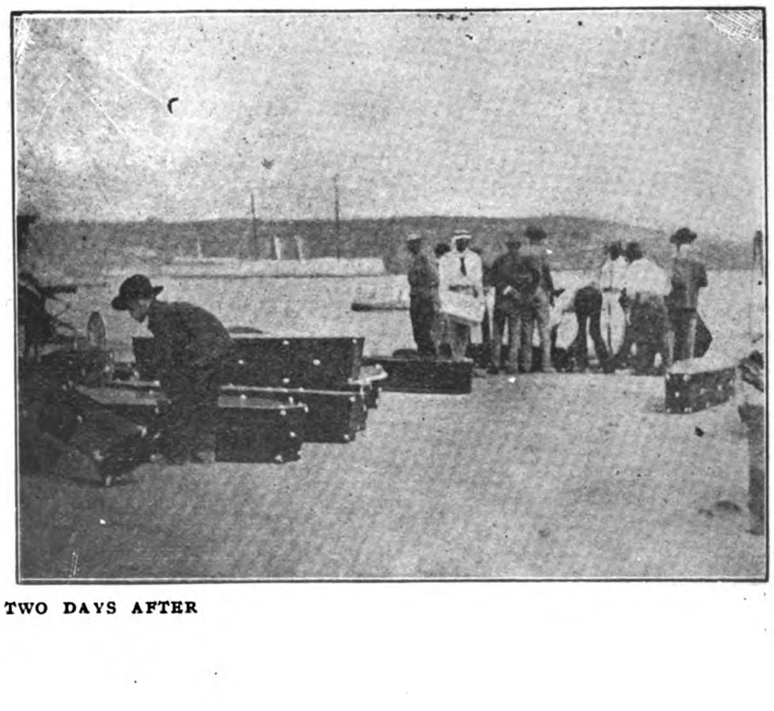
about one's own adventures. For this reason neither of the correspondents responsible for the story that threw discredit on the officers of the Maine felt inclined to write the details. One of them has since passed away. In memory of and in justice to his companion, and the officers of the Maine, the following tale is told by the other.

Feb. 15, 1911.—Thirteen years ago, to-day, the American Battleship Maine went to her last resting place in Havana harbor. Inside the steel-ribbed casket repose the bones of some 200 wearers of the Blue, whose lives were suddenly extinguished by the rending of the magazine, or the strangling of the waters that swirled in as the illfated ship sank to her mud coral bed of the tropical harbor. The tragedy was quickly over, and assumed its place in history as marking the commencement of the war between Spain and America. Many articles have been published giving the details of the catastrophe, but there remains a tale to be told which fits in to the events of that awful night, and throws some light on one or two obscure points. It is a tale of two correspondents; war correspondents they were called at that time. One of them, the most important to this story, has since departed for that other world where all is peace. The other, he is still on the "war path," and on this, the thirteenth anniversary of the calamity, feels that in justice to his companion and to round out Captain Sigsbee's narrative, the following tale should be told.

Back in the early nineties, while the Cuban insurrection was at its height, when massacre, murder, pillage, incendiarism, rape and highway robbery held high carnival in the Island, and passed as incidents of a righteous rebellion against the dominant power of Spain, there were few newspaper correspondents who braved the dangers of the open country, and saw for themselves the actual conditions, or who witnessed the savage battles, guerrilla fights, ambuscades and bush-whacking which made up the war. In addition to the ordinary hazards attached to the mission of a war correspondent—which is all in the day's work—there was the further danger of being captured and executed as a spy, for General Weyler had prohibited correspondents from entering the country and joining the Cuban army under penalty of death, if captured.

In other wars the correspondent had his recognized, though limited, rights, and marched with and under the protection of the army to which he was accredited. If captured by the opposite side, his status was well defined. But in Cuba he worked alone, with a continental army against him, and in constant dread of capture and death.

Under such conditions, it is little wonder that few men would take the chances, and it explains why during all that long drawn out nightmare of butchery, only three American correspondents entered the field and witnessed the bloody struggle that was slowly but surely exterminating the Cuban people. Of these three men, one campaigned in the East with Calixto Garcia and Gomez, being present at the hottest fights in that section, while the others passed through the brunt of the struggle with Gomez and Maceo, and between them participated in over 100 engagements, and traversed the unhappy Island from end to end. This story has to do with these two. Their names—it doesn't matter. To each other they were known as "Brian Boru" and "Face". Boru was a New Yorker, a wild, red headed chap, who in those days was always looking for trouble, and as usual found it waiting for him, and explains his presence in the war. He was correspondent of one of the large New York papers. He deeply resented being nicknamed "Boru" by his companion and tried to mislead him in a gentle way by saying that, in the long ago, his family name was German, with a "von" in it somewhere and a handle attached to it, and that he had a family crest and the rest of the paraphernalia which accompanies these things, to prove his origin and good old Teutonic descent. But it was useless, for the other answered very quickly that he didn't care how many crests or handles



AT THE MACHINA; TWO DAYS AFTER

there might have been to the name long ago, anybody could readily see by a look at the "mug" now that it had the map of Ireland stamped indelibly on it, and if there was any family crest at all, which he doubted, it traced back to his lineal ancestor, Brian Boru. The argument was closed after the usual Celtic manner of settling affronts of that nature in which the Celt was worsted. So he accepted the situation, and the name stuck.

The other was a graduate of a college in the middle West, a manly, handsome chap, and all round general athlete. He represented another of the great New York papers. An intense professional rivalry existed between the two, as was only natural when their respective papers demanded the news first. For a long time Boru called his companion by his first name, but all the while seeking for a fitting sobriquet to offset his own. The two had been separated for a month and Boru was on the trail of the other, trying to catch up with him in the mountains of Pinar del Rio. Halting for lunch at a lonely farmhouse, he enquired if an American passed by the day before. In the family were three pretty daughters, who all answered at once that he had been there and remained for several hours and marched on with his escort. And they went into raptures describing his good looks, and kept repeating again and again, "What a face he had". So Boru reciprocated by calling his companion "Face", as the] most appropriate nickname to fit his well known qualities.

For a long time the latter fondly accepted the term as the compliment it originally meant, and was accordingly pleased, but one day it dawned on him that it had another meaning, and referred to his "Cheek", which of course was exactly what Boru had in mind.

For if any man in the world possessed this quality, it was Boru's companion. For cool, unadulterated, downright nerve, he has rarely been equalled in the journalistic field. With a little more leeway he would have managed the entire Cuban insurrection and had Gomez obeying his orders and following his plan of campaign. Audacious, nervy, reckless, impetuous, rash—yes, he was all of these, but at the same time he was one of the truest friends and bravest men that ever stood in shoe leather. He also keenly resented his nickname, and, in the middle of a march, dismounted from his horse, and demanded that Boru should never again so address him. Boru also dismounted, and in this occasion had the best of the argument, so the name stuck, and to each other for ever afterwards it was "Boru" and "Face". But no one else ever dared to so address them.

Standing by the side of Gomez, together they witnessed the heaviest fights of the invasion, and riding with Maceo, they took part in the mad cavalry dash through the many batallions of Spaniards into Pinar del Rio, leaving a trail of fire and death behind them. At the bloody machete charge at Mal Tiempo where the Spanish regiment of Canarias was annihilated they were present; through the hell at Cacarajicara, the fierce attacks at the Tapia Hills, at the rout at Morales, the surprise at La Luz, the victory of Cabañas they were side by side. Through scores of other engagements they faced death on the firing line at the side of Gomez and Maceo, and other Cuban chiefs. Together with their personal escort of eighteen veterans under command of the noted bandit Mirabal, they traversed the provinces of Havana and Pinar del Rio, and met with many a hairbreadth escape. Together they crossed and recrossed the Spanish lines, stealing into Havana and other heavily fortified towns to place their dispatches into friendly hands, and as silently departing again for the country, with the entire machinery of the Spanish Police force and Secret Service in motion to capture them. Together they crossed the famous "trocha" or fortified line in Pinar del Rio, with their escort of eighteen men, a feat accomplished by only five parties during the war, and which resulted in disaster to the others. Together they faced death more times than it is seemly to brag of or to write about. When death seems sure, and no escape possible, the real natures of men arise to the surface. And so Boru and Face came to know each other's hearts, and were drawn together in a bond of friendship that bitter professional rivalry could not shake. For each had saved the other's life on various occasions.

When Boru was nearly dead with fever and dysentery in the hills of Pinar del Rio, it was Face who came along with medicines at the critical stage and nursed him back to strength. When their escort foolishly ran into an entire Spanish regiment at Quivican, ambushed and awaiting their approach, and Boru's horse was shot under him, and held him pinioned to the ground, and the Spanish guerrillas were not 100 yards behind, charging with flashing machetes to dispatch the prey, it was Face who, in the midst of a withering fire, reined up, dismounted and assisted Boru to disengage his imprisoned leg, and to mount again behind his horse, and escape to the shelter of the cane fields beyond. And the Bravo that the crime hardened guerrillas gave at this exhibition of sheer nerve, and the Vivas of the regulars in ambush showed that they appreciated. The Victoria Cross and the Medal of Honour were designed for deeds like this. When Boru was down and out with fever and lost his nerve at the crossing of the "trocha", after three days in the Majana Swamp with the alligators and constrictors, it was Face who cheered him up, gave him brandy, and lent a helping hand over the dangerous places and when at the critical moment of dashing between the forts, and the air was seething with the hiss of bullets, Boru slipped from the slimy tree trunks and went down into the mud and water over his head and thought the end had come, it was Face who halted, reached down and put his arm around him, and pulled him out, and steadied and guided his half blinded companion over the quivering network of logs and brush through the zone of fire into the safety of the forest. "Buck up, Boru, you red headed Irishman" was all he said. When Gomez first ordered Boru from his camp, and threatened to shoot him as a spy, because he possessed a Spanish military pass, it was Face who interceded and calmed the irate chieftain, and led the old warrior to offer Boru the command of the Cuban Engineer Corps. When at La Luz, the charging Spaniards again disabled Boru's horse, Face stood by and saw him through and out of the cul-de-sac. When Boru was wounded, and his horse again killed, and his clothing and hat riddled with bullets, it was Face who was at his side and gave him the first aid, and forced a reluctant cavalryman to dismount and give up his horse for his wounded companion. And, when it looked as though the last hour had struck for Face; well that is another story. Face has since faced the reaper, and been gathered in, and can't speak for himself, so that story will never be told. But Boru evened up the tally.

It was carnival time in the gay capital of Cuba. The streets of Havana were filled with merry makers and pleasure-loving Cubans intent upon enjoying the last days of the Lenten season. Beneath the grotesque masks and dominoes of the moving throng, the onlooker who knew his Havana might recognize some of the turbulent intriguers of the many political factions into which both Spaniards and Cubans had split. Under cover of the carnival disguises, many otherwise prudent Cuban patriots were flitting about the streets intent upon dangerous missions impossible of execution if their faces were recognized. Cuban officers from the country, who had slipped in through the lines for a sight and touch of their loved ones, risking death at sunrise if recognized or betrayed, braved it all, and joined the procession on the Prado. The jests and quips, mirth and laughter, the chatter and banter of the groups of passers-by, the antics of clowns, the glances from the langourous eyes of beautiful women, all seemed strained and unnatural. Something was lacking. The old fashioned Carnival spirit seemed absent this year. The political cauldron was seething and boiling over in its stead, and a feeling of impending disaster was in the air. Two weeks previous a bomb had been thrown in the leading theater of the capital, and rumours were rife that the next one would find lodgement in the Palace of the Captain General or the American Consulate Since the arrival in the harbor of the Battleship Maine, the feeling against the Yankees had crystallized into an intense hatred, and threats were freely indulged as to the fate in store for them, after the Consulate had been destroyed. Trouble had been brewing for months, and under cover of the Carnival it would come to the surface. And Boru and Face, whose mission in life at that time was to be on the spot where trouble was liable to break out, were there together.

On Weyler's departure, and under General Blanco's rule, they had patched up their differences with the Spanish authorities and permitted to reside in Havana, after promising the Chief of Police to cause him no more trouble. Col. Paglieri, of the Guardia Civil—the crack corps of the Spanish Army—had held the post of Chief of Police in Havana for over three years. He was an old friend of Boru's and in the days before the war, when "Old Pag" was in command of his corps in Havana Province, Boru had hunted bandits with his men in the mountainous wilderness back of Aguacate. Boru and Face, tired of being shot at in the country, had settled down to a more enjoyable and safer existence in the capital. Together they plied their calling in all the out-of-the-way and suspicious corners of Havana; they visited the Maine, and guided Lt. Jenkins, the intelligence officer of the ship, to where he could secure the data about the new fortifications. Together they sat on the night of February 15, 1898, at a table in the arcade of the Pasaje Hotel watching the passers-by. Face's wife, an intrepid and handsome girl, and the "Skipper," who represented another New York paper, completed the group.

Boru and Face knew their Havana, and knew Cuba and the Cubans. Fresh from the country and two years of campaigning with the insurgents, they knew them also, and their friends and sympathizers in Havana. Boru had been invited by Lieutenant Jenkins to dine aboard the Maine that evening, but something occurred which prevented his going, and now after dinner at the Pasaje the little party described were seated at one of the small, round, marble topped tables in the Arcade, sipping the "refrescos" and watching the kaleidoscopic changes of the crowd. A few of the maskers nodded or whispered some slight words which revealed their identity to Boru and Face, who nodded in return, as the spoken name if overheard would have meant instant arrest and execution in the morning. The night was dark, and the thick clouds wafted out to sea by the light land breeze, shadowed the few stars that showed at intervals through the fleeces. Out in the bay the merchant ships and men-of war lay peacefully at anchor, and as two bells struck (9 p.m.) the bugles sounded "taps" and the boatswain's whistles shrilly "piped down" for the night. Aboard the Maine, the crew turned in at the regulation hour, and the night watch was set. Although nothing had as yet occurred to indicate the possibility of war with Spain, the Captain of the Maine considered he was in an enemy's harbor, and was prepared for eventualities. It might be said that the Maine was cleared for action, for rapid fire ammunition had been brought on deck ready for serving the guns at an instant's warning, and the men held under the strictest discipline. None of the crew had been permitted shore leave, and few officers enjoyed the privilege, and on that night all the officers except four were on board.

For weeks the Maine had swung idly at her

buoy in the tideless harbor of Havana, with her bow to the light breeze, from the North and East. But on this eventful night, the land breeze shifted to the Southwest and the battleship slowly swung round to meet it, the first time since her entrance into the harbor that her bow pointed toward the Havana water front. In the light breeze she lazily swung into line and took up the slack of the mooring cables and steadied down to her new and permanent position. Here the end came and found her.

Forty minutes past nine. A terrific explosion shook the city, windows were broken, doors shaken from their bolts, and merchandise in the stores thrown from their shelves. The shock broke the gas mains along the water front, and extinguished the electric lights and plunged that section of the city into darkness. The sky was lit up with an intense lurid glare, while high above could be seen innumerable coloured lights resembling rockets.

The first explosion was followed immediately by a second, terminating in a grating rending metallic sound as though heavy anchor chains had been quickly dragged across a corrugated iron roof. The sounds of revelry ceased before the unknown horror. Women screamed, faces paled, and strong men shook with terror. Face and Boru jumped up together. "The Palace," said one. "No, the Consulate," answered the other, for neither realized what had happened. "To your room, my dear," said Face to his wife; and he and Boru made a dash for the nearest carriage. It was a handsome private victoria, owned by an aristrocrat of the city, with a uniformed driver on the seat, holding the reins over two blooded Andalusian horses. He was paralyzed and blanched with fear, but mustered up sufficient courage to say that the carriage was private and could not be used. Boru and Face had worked so long together that a glance or word in such emergencies was sufficient for each to take up his share of a difficulty, and here was a situation that demanded instant and urgent action. As Boru sprang into the carriage, Face jumped on the box, grabbed the reins and before the astonished coachman at his side could remonstrate the thoroughbreds were dashing around the corner and headed towards the lower part of the town. The coachman regaining his courage laid his hands on Face to check the mad rush of the carriage, but Boru from behind slipped his arm around the flunky's waist, and jerked him bodily in the cushioned seats behind, and then sat on him. Boru tried to explain and sat matters right with the enfuriated Spaniard by offering him some gold, but he spurned the "centenes" and demanded to be released, and then lustily screamed for the Police. So there was nothing else to do but muzzle him, and knead some sense into his head. With Face standing in the driver's seat, bending low like a charioteer, lashing the terror struck steeds, the carriage turned into Teniente Rey on two wheels, and was nearly dashed to pieces against the corner. Ahead, the street frowned like the mouth of a dark canyon. Not a light or sign of life was visible. Over the great paving blocks, the carriage bounded, swaying from side to side of the narrow "calle", now on one wheel, now on two, and at times the four wheels seemed to leave the ground altogether. The coachman had been quieted and lay huddled and thoroughly subdued on the floor of the victoria. Dark forms were distinguished in the doorways of the stores, and above the hoof beats of the steeds, and the rattle of the carriage, the word "Maine" was continually repeated. It was only then that the truth flashed across Boru's brain. Up to that time they were directing their course towards the American Consulate which lay a few blocks ahead. "Great God, Face, it's the Maine! To the Machina! Faster old man, faster." And Face urged the animals to further speed. "Take the whip, Boru!" And while Face bent low and held the reins in a firm grip, Boru, with one hand holding on, lashed them into a frenzy. How Face kept his feet was a miracle. Boru expected every moment to see his companion hurled to the street in one of the violent lurches of the vehicle, and for a time held him by the waistband of his trousers. But Face was in his element and performing in grim earnest now what he had frequently practiced in the past. For at one time he had been a member of a crack Cleveland Cavalry troop that was escort to Governor McKinley—and fancy bareback riding was one of his many accomplishments. Boru had witnessed him on several occasions standing balanced on the back of a restive charger in the midst of a heavy engagement so as to get a better view through his field glasses. Boru always called it playing to the gallery, and d—n foolishness, but Face never minded his criticisms. The Cubans liked it, and thought he was a great man, so Face was satisfied.

And the distance was soon covered. Probably never before or since has the staid old capital witnessed such a mad race. As the carriage swung around in front of the Custom House, its course was abruptly checked, for ahead the street was packed with a wild mob of Spaniards hurrying around the corner by the old Post Office into the little square where the water front gate lets into the Machina, and the Landing Stage. Only by pulling the animals back on their haunches and swerving them around against the stone walls of the Custom House was their career checked, and just in time to avoid running down and over the crowd ahead. Face and Boru jumped out, and the latter threw a couple of gold pieces into the coachman's hat, but instead of accepting he loudly yelled for the Policia. The two companions cared nothing for the police now. They were intent in getting around the corner and out on the wharf, where the truth and extent of the calamity could be verified. Ahead surged the crowd of excited Spaniards. Delay meant quick arrest, so into the mob they jumped. They pushed, elbowed, kicked, and fought their way through the jam. Loud and deep Spanish curses were flung at the two. A blow from a heavy cane directed at Face's head was caught by Boru on the arm, and they both ducked and escaped another attack from a justly indignant Hidalgo, when Face had jabbed in the small ribs to push him aside. It seemed an hour, but it was over in a few minutes, when the two stood together on the other side of the mob, fought their way through hundreds of excited Spaniards only to find the big gates of the Machina closed, and a guard of soldiers already stationed there with fixed bayonets holding back the people from the water front beyond. Behind them the outraged mob were hurling curses and clamoring for satisfaction for the manner they had been handled.

"Open the gate!" said the two at once. "Back!" said the Guards, "no one passes here tonight." To go back meant arrest by the Police for stealing the carriage and assaulting the driver. It meant delivering them to the tender mercies of the excited crowd. To go back when out in the bay, now plain before them, their fellow countrymen and friends were struggling to save their lives, and there was a chance of doing something. Every instinct in them revolted, but there seemed no way to break through. The heavy iron gates were closed and locked, and the Guards there to perform their duty, and let no one to pass.

Who was it that spoke first, or did they both speak together. Boru does not remember, but they both lied. "Open the gates—we are two officers of the Maine, and must get through". What was a lie to them at that moment. They were accustomed to lie to the Spaniards in passing through their lines, and this was only a little white lie anyway. Little did they think that the lie thus uttered to gain their own ends would travel so far and cast discredit on the discipline and morale of the officers of the battleship. They could not see then that the mob would repeat the circumstance, and enlarge on it, or that the Spanish papers the next day would publish the story that the Maine's officers were ashore that night carousing and drinking, instead of being aboard their ship. But that is what happened, and although it has been officially proven that only four officers (an engineer, two cadets, and the gunner) were on shore that night, the Spaniards always remember the two Americans who acted like drunken men in the wild ride and fight through the mob, and who stood disheveled and excited before the sentries at the Gate, saying, "Let us through, we are officers of the Maine".

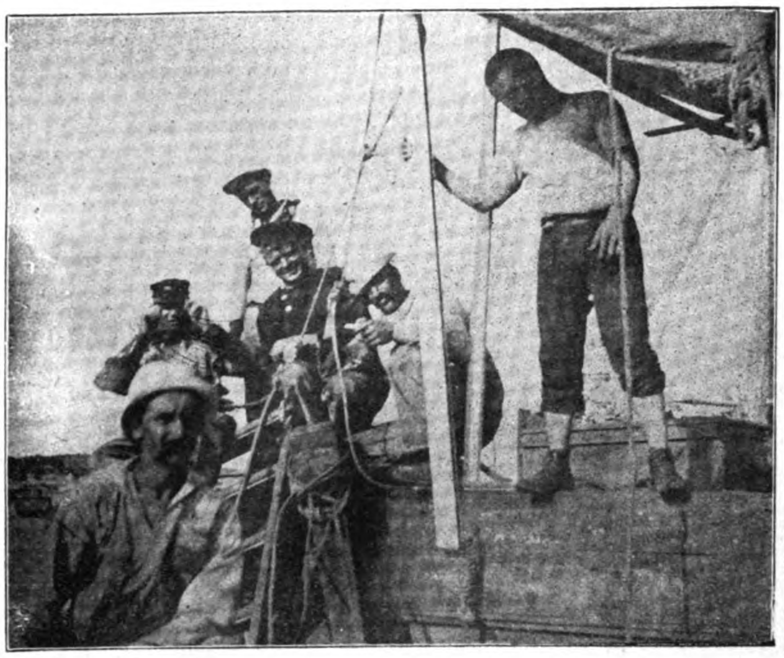
The Guards stood erect, saluted, and the gates were unbolted and swung open about a foot, or enough for them to squeeze in "Pase, Oficiales del Maine", and the crowd outside echoed "Oficiales del Maine".

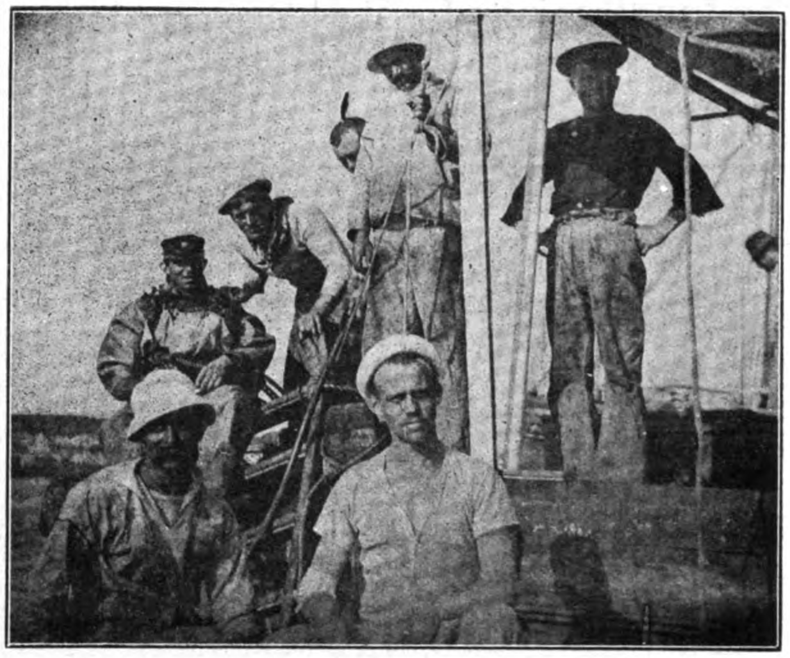
The two companions sprang through the old Baggage Inspection shed, and out on the wharf, and the drama in the bay was unfolded to their gaze. The Maine had sunk, and the cellulose had started to burn with a dull red flame. Inside the circle of light, the boats of the Spanish cruisers and others could be seen darting here and there on their mission of rescue, but the rest of the bay was wrapped to darkness. Under the Customs shed along the wharf, it was impossible to distinguish faces, and there wasn't a boatman in sight. A few persons had entered on the wharf before the Guard was posted at the gate, and were silently watching the scene in the bay. Boats there were in plenty, tied up for the night, but no one to man them. After stealing a carriage, the temporary confiscation of a boat did not trouble the conscience of the two companions, and they made for the lightest one, which like all the harbor boats of Havana was fitted with a small mast and sail. As they were undoing the painter from the mooring ring on the string piece, a form came running through the darkness, loudly commanding everybody to leave the wharf. Behind him followed a file of police. "Back out of here everybody, no one must leave the wharf tonight," and the police roughly pushed the onlookers towards the gate. In an instant Face and Boru recognized their old enemy Col. Paglieri, the Chief of Police. Waving his cane and swearing roundly at the two forms, he ordered them back. It was a chance in a thousand, but the two took it. They were used to lies by then, and remembering how the Guards had saluted, and let them pass, they repeated the lie, and as "Old Pag" ordered his men to take them away, they again said, "But we are two officers of the Maine, and must reach the wreck."

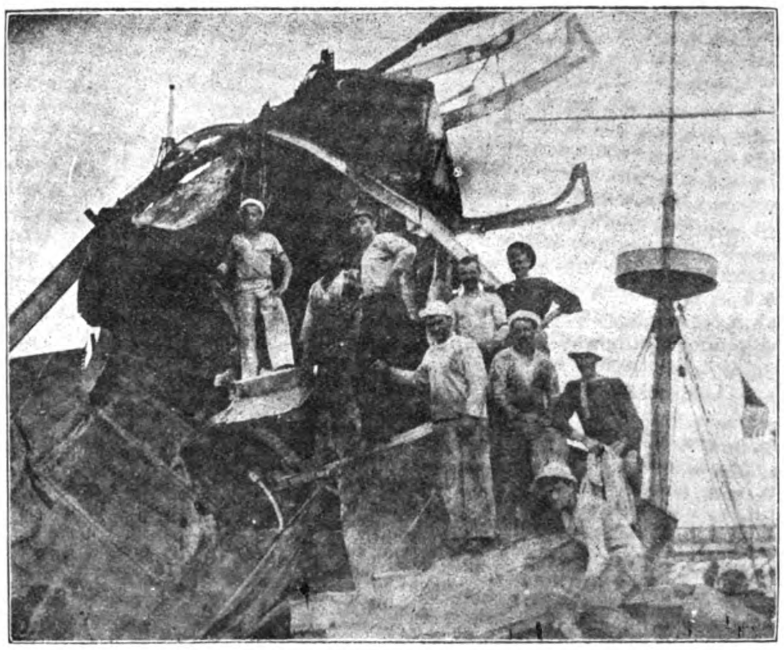
Instantly the demeanor of the old soldier changed. The stern and relentless police official before whom all Havana stood in dread, dropped his official mask, and the traditional Spanish cavalier and gentleman stood revealed. His hat came off, and with a profound bow he said, "A thousand pardons, gentlemen, but to prevent confusion and facilitate the work of rescue, orders have just been issued that no boat shall leave the water front tonight. My own boat is here, and I am just leaving for the scene of the disaster. I beg you to accompany me".

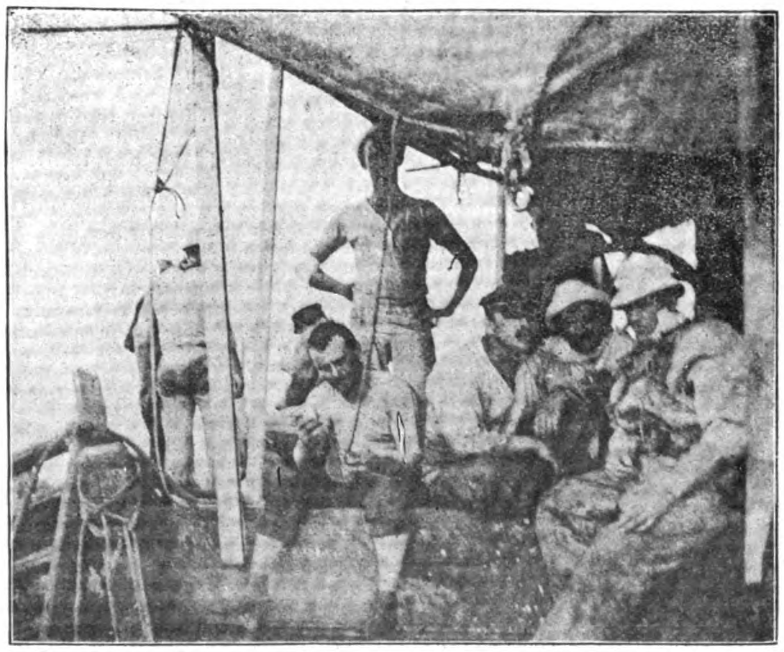
It was no time to consider the question of ethics. By fair means or foul, it was the duty of the two companions to reach the wreck, and into the boat they jumped along with the official. Two brawny Spaniards took up the oars and the boat sped out into the darkness of the bay. Face took up his position in the bow, standing on the little forward deck, with one hand steadying himself by the fore stay, and with the other shading his eyes and peering into the darkness, on the lookout for some poor fellow who might need help. In the stern sheets, under the awning lattice, sat Boru and "Pag" with the latter holding the tiller ropes. There was no conversation. An occasional, Ave maria! from the Colonel, were the only words to break the silence. The boat sped onwards under the strong strokes of the oarsmen.

The fire on the Maine burned up brighter and fiercer as it caught the dry cellulose in the twisted upper works, and then reached the rapid fire ammunition which had been





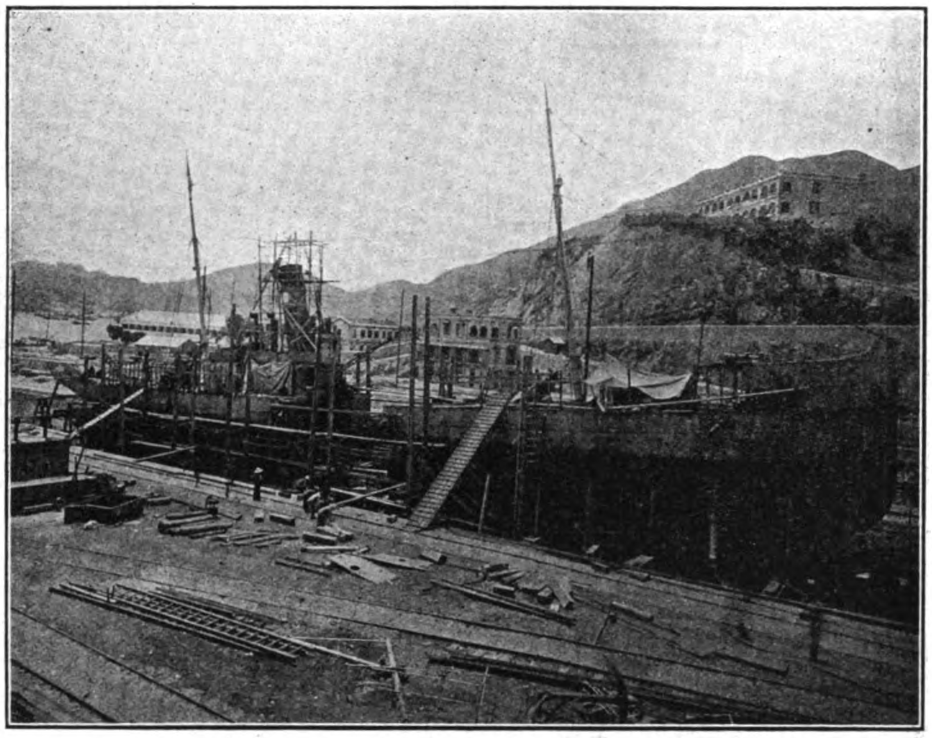




GROUPS OF THE AMERICAN DIVERS ON WHOSE DISCOVERIES THE FINDING OF THE COURT OF INQUIRY WAS BASED.

The Lengthening of a Steel Steamer at the Taikoo Docks

To the Taikoo Dockyard & Engineering Company of Hongkong Limited falls the credit of being the first firm to execute the lengthening of a steel steamer in Hongkong, which work was contracted for and executed on the S. S. "Union," owned by the Compañía General de Tabacos de Filipinas, Manila, P. I., during the summer of 1910.



THE S. S. UNION ON THE SLIP CUT AND DRAWN APART

The steamer, which is employed in the interisland trade of the Philippine Islands, was built in Leith, Scotland, in 1891, was of 615 tons gross, and 177′0″ long between perpendiculars, and was of the type known as flush deck with top gallant forecastle. Before proceeding with the lengthening, the whole of the deck houses and upperworks were removed, as the scheme of accommodation, which was entirely new, would not work in with the original. Immediately thereafter the vessel was placed on the patent slipway and severed just forward of the boiler space, and when all was ready the upper part of the slipway carriage, which had been disconnected for the purpose, was hauled up with the forward end of the vessel resting on same, until the desired amount of new length was reached, the time occupied in this drawing apart being only three minutes.

The new part was then built in, great care being taken to maintain the fair alignment of form; and in addition to the work of lengthening, a partial double bottom for water ballast, a new watertight bulkhead, and a complete shelter deck joining up with the forecastle, were constructed. At the same time the whole of the hull was carefully surveyed and brought up to the requirements of Lloyd's so as to maintain the full class with that Society.

The accommodation for passengers, which was fitted up in the new shelter deck space, consists of 12 large staterooms luxuriously fitted up and upholstered, the floors of same, as also the entrances and alleyways, being of inlaid woods of handsome design. All the staterooms have electric light and fans, fold up lavatories, etc., and convenient to the staterooms modern bathrooms and lavatories are situated. The officers' accommodation and crew spaces are also contained in the shelter deck, and the remainder of the space will be utilized for the carriage of troops or for light cargo. On the shelter deck forward is a large steel house, which contains the dining saloon, owner's cabin and bathroom, stateroom entrance and pantry. The dining cabin is handsomely panelled in polished hardwood and is well lit with large sliding windows; seating accommodation for 32 people is arranged for and numerous electric fans, electric lights, bells, etc., all contribute to the comfort of passengers. This

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stored on deck ready for emergencies. Explosion followed explosion, and thousands of fragments of the bursting shells shrieked through the air, and ricocheted over the water. For a few minutes the bombardment was terrific. Countless jets of water were thrown up on the bosom of the bay as the missiles plowed the surface. The situation was one of great peril. And as the little boat sped on under the hail of fire, the Spanish cruisers and merchant steamers could be seen slipping their moorings and moving out of the zone of danger. Face and Boru had passed through many artillery fights in the insurrection, but always felt that when a Spaniard took real aim at any object, the object was safe. And so they were callous. But the few minutes in Havana Bay, while the Maine was delivering her farewell salute to the world, surpassed anything in their previous experience. The spray from the fragments of shell hitting the water fell into the little boat, a hurtling missile splintered the mast and another tore a hole in the gunwale.

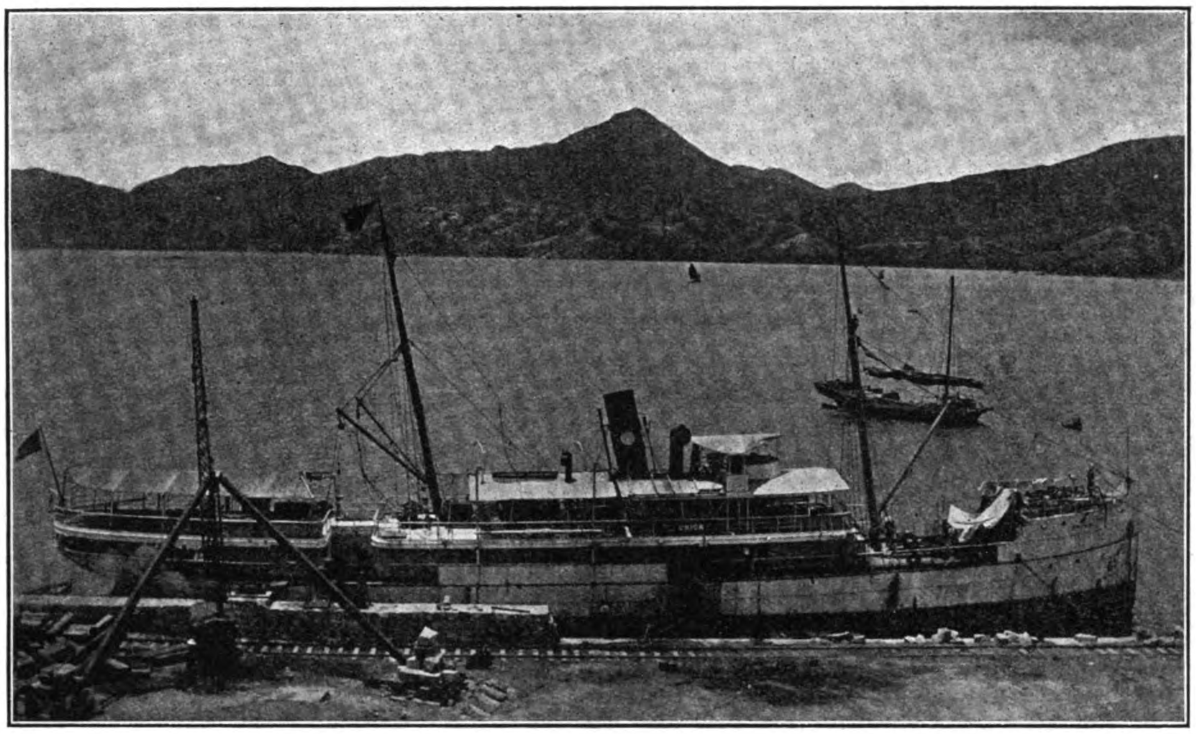
"Jesus Maria! Virgen Santísima!" cried the boatmen, and dropped under the thwarts palsied with fear. Here was a predicament: The little boat was now within a few hundred yards of the Maine, and entering the circle of light. Ahead Face discerned some one in the water, and was crying out "Pull! Pull!" And then the stern, silent old Spaniard awoke to action. "Get up! pull——you!" and with his heavy cane he beat the frightened oarsmen to their places. Boru assisted with a rope's end, and Face stood in the bow throwing sulphurous epithets on the entire breed of Havana boatmen. And so, in the midst of the incident, with a rain of missiles shrieking overhead, the boat came within the circle of light. "Pag" had finished persuading the boatmen that they had better stand the uncertainty of being hit by the shells than the certainty of being beaten to death if they didn't pull. And the boat sped onwards once more. Face and Boru had now forgotten all about the incident on the wharf, and were intent on reaching the wreck. Suddenly, however, the old Colonel gave the abrupt order for the starboard oar to back water, and, jamming the tiller over, the little boat swung around and turned again towards the water front. Face yelled. "What the devil are you doing, there is a man there in the water", and Boru made to take the tiller ropes away from the Colonel. But the old soldier held up his hand and very quietly but firmly said, "We will return to the Machina. You have imposed on me, and not acted the part of gentlemen." "What's the matter with you," said Face, "head the boat around, quick." "Gentlemen, you assured me you were two officers of the Maine, but you," pointing his finger at Face, "are Mr............. correspondent of the New York..............," and turning to Boru, "you are Mr. .... of the New York ....You have caused me trouble enough these last two years, and now you go back."

Boru knew the old Colonel meant what he said, and realized the only chance to avoid losing the night's work was to promptly apologize. But to do it properly and safely he had to lie. And in his finest Castilian, he said, "Why, if this isn't my old friend Colonel Paglieri! I didn't recognize you in the darkness. I thought it was another official, for I would never have imposed on an officer of your rank, and one whom I esteem so highly as an old friend. Colonel, I sincerely apologize to you on behalf of my companion and myself."

And once more the finer instincts of the old warrior revealed the true gentleman. Time and again had the two correspondents eluded his vigilance, and laughed at the traps he set for them, and brought down on his head the sharp reprimand of his commanding general, and here on this night they had again outwitted their old foe. But he generously accepted the apology so spontaneously tendered, and turned the bow again towards the wreck. And so Face, Boru, and the Chief of Police arrived at the Maine, just twenty minutes after the explosion, the first boat from the Havana shore. It was all over. The cutters of the Alfonso XII, the Spanish Mail, and the City of Washington had gathered up the survivors. Charley Thrall, of the Electric Light Co., and Von Vechten, of the Standard Oil, had come out from Regla in their launches, and done noble work. As the three companions came alongside, Captain Sigsbee was entering the boat to take him with other survivors to the City of Washington. The full significance and awful horror of the scene overwhelmed the correspondents, and the old Spaniard. Instinctively they uncovered in the presence of the great death. Face and Boru choked down a sob, and the grim Colonel muttered a prayer for the souls of those imprisoned in the mighty casket. Sigsbee beckoned to Boru to follow him to the City of Washington, and on the landing stage of the gangway, Col. Paglieri, in the name of the Spanish Government, offered his sympathy and assistance to the American Captain. The rest is history. Captain Sigsbee not daring to trust any of his own men ashore that night confided to Boru his official dispatches to place on the wire, and Face was with him at the cable office when the line was opened for Boru by order of the Captain General.

apartment, as also the owner's cabin, is luxuriously upholstered and has an inlaid wood floor.

Over the dining saloon is a spacious promenade deck for passengers, and on this deck there is also the navigating officer's cabin, chart house, and steering gear.



THE S.S. UNION AS SHE ARRIVED ALONGSIDE THE DOCKYARD

The vessel as completed presents a very fine appearance, having one pole mast forward with signal yard, derrick posts and winches for the quick working of cargo at all the hatches, steel lifeboats, awnings all fore and aft, and generally is equal to any first class modern steamer suited in every respect for a tropical climate.

As lengthened the vessel is now 204'6" between perpendiculars and the gross tonnage has been increased by 396 tons.

On a trial which was made on the measured five miles at Hongkong, the speed attained was over 11 knots, which, according to the data of the original vessel, is about the same as she did prior to being altered, thereby showing that the lengthening of the vessel has not in any way reduced her speed.

THE YUNNANFU ELECTRICITY WORKS.

Yunnanfu, the capital of the province of Yunnan, has a population of 60.000 and is situated in the table lands region to the north-east of that province. Its walls enclose an area rectangular in form running 1.5 miles N. S. and one mile E. W. There is little industrial activity, commerce being its main support. The installation of an electric light plant now under way, however, is an indication of the progressive character of the inhabitants. This plant originally proposed for the lighting of the numerous yamen, schools, police stations and main streets, will no doubt be appreciated by the inhabitants as they become familiar with this kind of lighting.

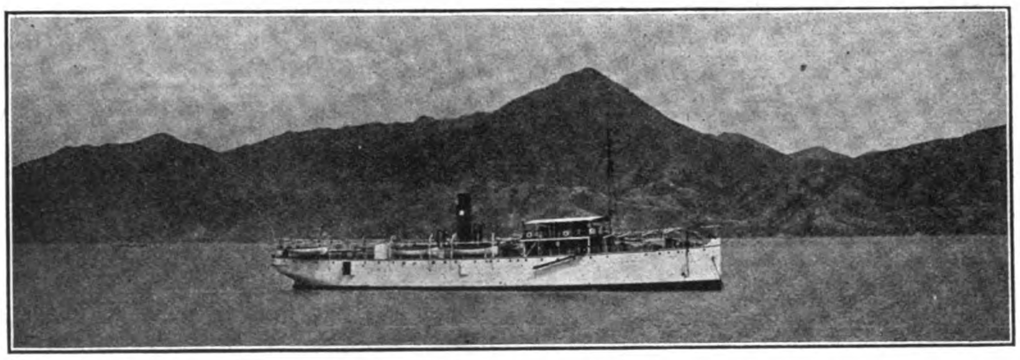
Water power will be used for generating purposes and the head is located on the Tsin-yu-tan about 15 miles distant from the city. This outlet is surrounded by rice fields and the clay bottom of the Tsin-yu-tan is covered with a green turf, the result of atmospheric conditions. It is at the point where the outlet from the lake reaches the hill Tsin-yu-tan that the channel to the power station will be cut through the rocky sides of the mountain. This channel will be lined with quarry stone and water cement mortar, the materials being available in the vicinity and broken stones easily secured from the blastings. The power house will be located at a sharp angle of the hillside on the right bank of the outgate.

The power plant will be equipped with two water-wheel turbines developing 300 h. p. each at a speed of 375 r. p. m. supplied by the wellknown firm of J. M. Voith, Herdenheim on the Brenz, Germany. They will have direct coupling with two three-phase current generators for 275 K. V. A. and a circuit of 10,000 volts; two exciting machines for direct coupling to the generators, with all the necessary measuring and controlling instruments will also be installed.

The high tension line from the power house to the city will be fitted on timber masts and connect with the transformer house at the Great West Gate of Yunnanfu where the current will be reduced to 3.000 volts. Two switch boxes will be installed here to serve the main-ring line in the inner city. Mast transformers will be fitted to timber poles and a larger transformer will be erected near the Viceroy Yamen. The whole line will be provided with safety net-work.

The three-phase current system with effected zero position will be used on the low tension line with a circuit of 110 Volts between zero and phase-line. The low-tension side of the transformers are to be protected on the timber poles by means of triple-pole fuses, which are watertight and fitted into iron-boxes. High and low-tension lines will be fitted on wooden poles of 11 meters 8 meters from the ground, so that crossings can be made on the existing protecting network of high-tension line.

All branch lines to the houses, etc., will be protected by means of overhead line fuses. The contractors for the work are the well known firm of Carlowitz & Co.



THE S.S. UNION LENGTHENED AND READY TO PROCEED TO SEA

THE WEST SIBERIAN RAILWAY

The difference of opinion over the route of the new railway in West Siberia has been adjusted. The commission consisting of the representatives of six ministries which met last autumn to discuss the matter has come to a decision. The project is now before the Imperial Council and the Council of Ministers, but it is not believed that these two bodies will raise any further objection.

The new West Siberian main line begins at the town of Uralsk, proceeds via Orenburg and Akmolinsk to Semipalatinsk in a due east direction; thence north-east to Barnaul, from which a short branch will run to the prosperous town of Biisk. From Barnaul it proceeds due north to the Great Siberian Railway joining it at Ob or Novo-Nikolaievsk. The town is already regarded as the center of the Siberian grain trade and the opening of the new line will give an impetus to its still more rapid development.

It is believed construction will begin immediately, for the reasons the Commission has given for the railway are sufficiently convincing to exclude Governmental opposition. The principal arguments presented in support of the construction follow:

1. The line is of great strategic importance.

2. It is absolutely necessary in the interest of the colonization of Siberia; for it runs through country that is very fertile and well suited for immigrants, thus aiding the settlement of the agrarian question, not only in Siberia but also in Russia.

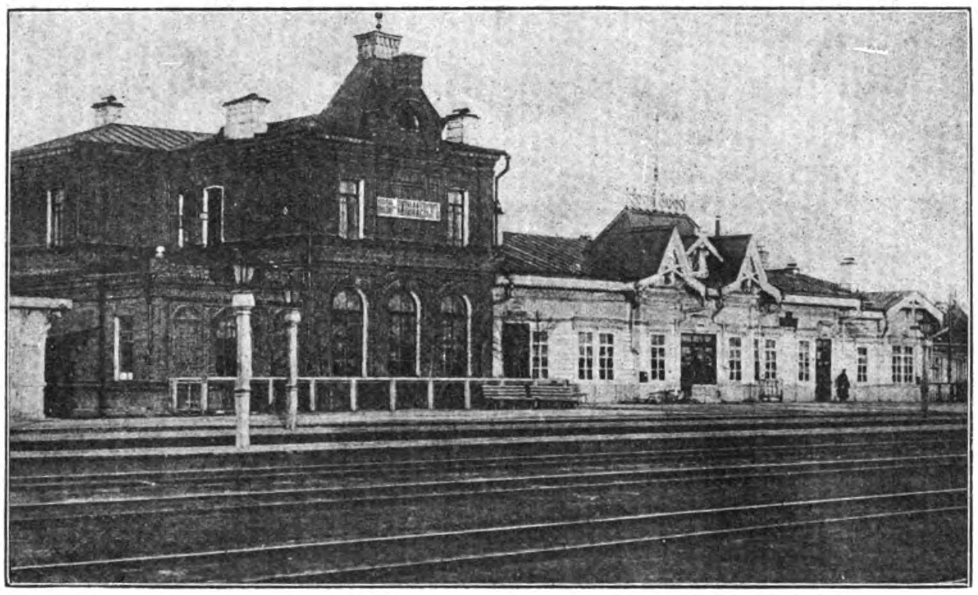
3. It traverses a region of four million square versts that is now sparsely inhabited but is capable of producing largely both grain and other natural products.

4. Above all, it opens the enormous natural wealth of the Altai mountain region which, according to the latest researches, will be worth many millions to Siberia. Besides the mountain forests, that are still vaguely known, mines of iron, copper, silver, lead and zinc have been in operation for many years, but have never been properly worked, in spite of the richness of the ores. Freight and other expenses have swallowed up the profits. The new line will transform all this like an enchanter's wand.

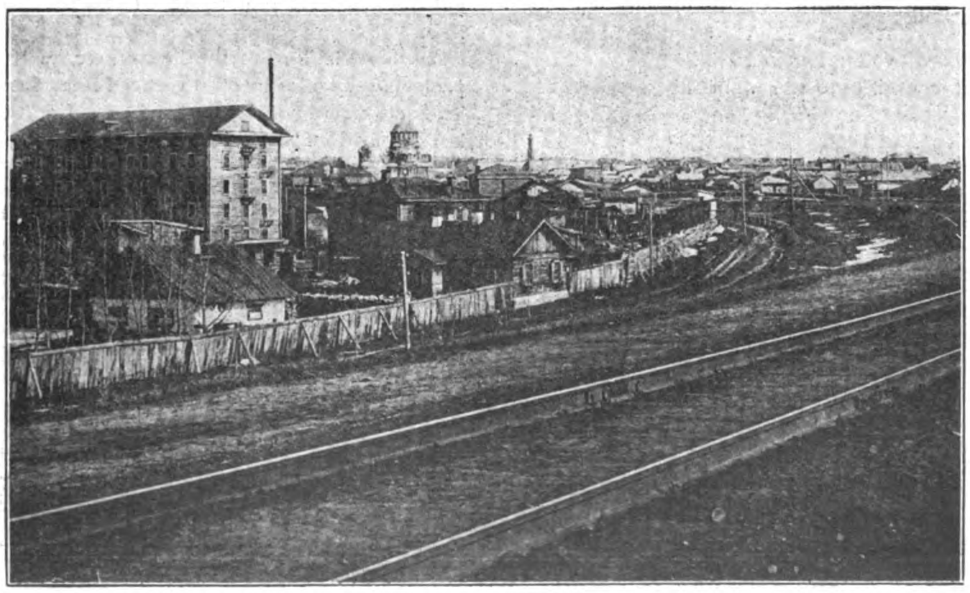
The new line will be more than 2,200 versts (the verst is nearly the same as the kilometer and equals two-thirds of a mile); the expenses are estimated at 186 million roubles, of which 170 millions will be the bond-issue.

If the construction is begun in the spring of 1911 or even in the previous winter it is to be hoped that it will be open to traffic in five years at latest, as it can be begun at both ends at once.

The same Commission has decided on a line in Trans-Caucasia, from Aryss, a station on the Orenburg-Tashkend Line, via Pischpek to Verny. This line will be specially serviceable to the cotton and silk industry in Ferghana Province and will fill wants that should have been attended to decades ago.



THE STATION OF THE TRANS-SIBERIA RAILWAY AT NOVO NICHOLAIEVSK



NOVO NICHOLAIEVSK: THE GREAT GRAIN AND FLOUR CITY OF CENTRAL SIBERIA

WATER-TUBE STEAM BOILERS

Of recent years the water-tube boiler has come to the front so rapidly that no doubt a few particulars of the leading type as made by Messrs. Babcock & Wilcox Ltd. will be of interest to our readers.

The standard land type of boiler is shown in fig 1, the sectional construction and staggering of the tubes, points which are essential to ensure high working efficiency and provide for unequal expansion, should be noted.

Of late years, owing to the demand for higher boiler efficiencies and smokeless combustion, this firm have made a specialty of superheaters and mechanical stokers; as we shall probably return to these subjects at a later date, we refrain now from going fully into the question. But fig. 2 will give our readers a very good idea of the arrangement of one of these boilers fitted with an integral superheater and mechanical chain grate stoker.

Fig. 3 shows a boiler of the marine type such as supplied regularly to the leading Navies and the Mercantile Marine, whilst fig. 4 illustrates the "White Forster" boiler, of which Messrs. Babcock & Wilcox Ltd. are the sole licensees and makers, for tor-

pedo boats, torpedo boat destroyers, scouts and vessels of light draught.

It is also interesting to note that a specialty is made of boilers for transport up country and to places difficult of access; in such cases a weight limit of 250 lbs. can be obtained.

The advantages claimed for these boilers are: Safety from Disastrous Explosion, High Efficiency, Low Cost of Upkeep, and Steaming Capabilities.

SAFETY.—In these days one of the first considerations of a steam user is the element of safety. The importance of this cannot be too greatly emphasized and attention may at once be called to the fact that it is a strong point in favor of the Babcock & Wilcox boiler. Being composed of wrought steel tubes, with a drum of comparatively small diameter, it possesses a great excess of strength over any pressure that it is desirable to use. As the rapid circulation of the water ensures equal temperature in all parts, the strains due to unequal expansion cannot occur to deteriorate its strength. The construction of the boiler, moreover, is such that, if unequal expansion does occur under extraordinary circumstances, no objectionable strain can be caused thereby, ample elasticity being provided for that purpose in the method of construction.

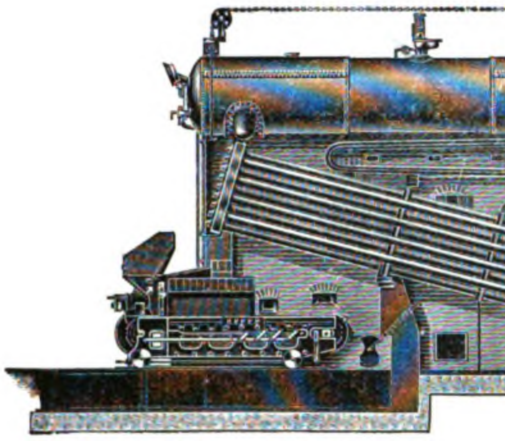


FIG. 1

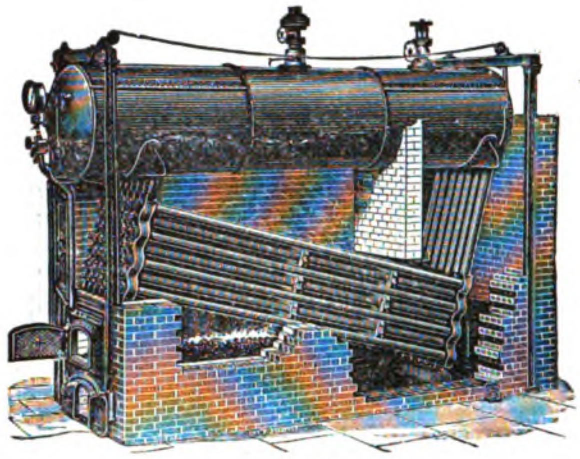


FIG. 2

Amongst the numerous instances to be found in the Company's records, in which this has occurred it will not be out of place to quote one of the most remarkable of them. It shows incidentally how the Babcock & Wilcox Boiler may even be left in the most inexperienced hands without fear of serious disaster. In the case in question the boiler was installed at a county gaol and was in charge of one of the convicts, who, after starting the fire as usual in the morning, was surprised not to observe, after an hour or so of waiting, any signs of activity in the steam gauge. This fact was disclosed to some of the officials of the prison, and an investigation was instituted to ascertain the cause, disclosing a fact that at once relieved the boiler from any responsibility for the absence of steam—for there was no water in it. It also showed that the blow off cock was wide open, and had been since the night before. After the officials had opened the furnace door and seen the white hot tubes, it was thought a good idea to get some water in the boiler as quickly as possible; so that they shut the blow-off cock and turned on the city water. The result justified their expectations, steam was made very quickly; for a moment it roared through the safety valve with a fearsome sound; and that is all that happened, beyond the renewal of a few of the tubes and one steel casting.

EFFICIENCY.—The *economy* that results from the use of these boilers is undeniable. It is largely attained by the provision of thin heating surfaces. The design is also such that the volumes of water in contact with the heat are small, and receive the flames at right angles to their course. The tubes are staggered, the gases are thoroughly broken up as they rise, and passing into the combustion chamber under the drum, they expand and combine again before passing a second and third time through the tubes Complete combustion, rapid steaming, and consequent economy are thus facilitated. It may be added that in thirty tests, extending over twelve years, under a great variety of conditions and circumstances, by no less than twenty different engineers, and with only two exceptions on boilers in daily use for manufacturing purposes, with all descriptions of coal and at varying rates of combustion, covering an aggregate of nearly three months regular working and evaporating over 3,000 Tons of water, gave an average evaporation of 11.4217 lbs. of water per lb. of fuel. It is pretty safe to say that no other boiler similarly tested has ever beaten this record.

As bearing on this subject the following extract from an article written by Lieut. H. C. Dinger, U. S. N., regarding the round the world cruise of the United States Fleet in 1908, will be of interest. Two types of shell boiler and three types of water-tube boilers were in use. Lieut. Dinger states that after reducing all the figures to a common basis, the Babcock & Wilcox Boilers were by far the most economical, the figures showing a saving in coal consumption of from 8 9 to 16 per cent in their favor and that as regards repairs at the end of the voyage, practically none were necessary.

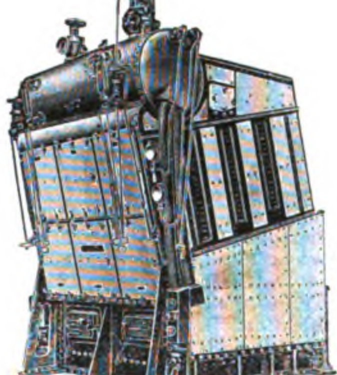


FIG. 3

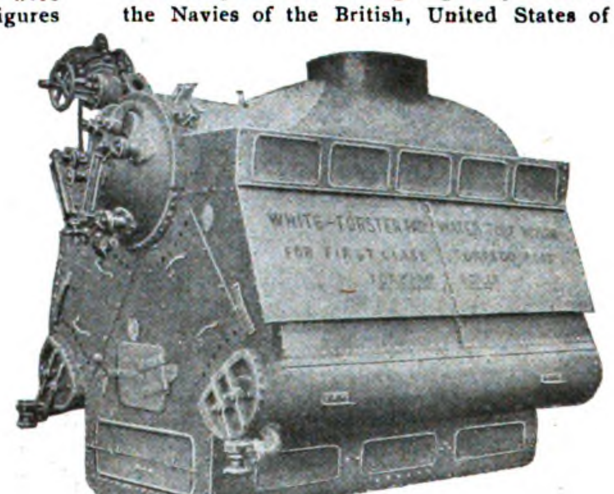


FIG. 4

The British Government made extensive trials with the Battleship 'King Edward VII.'' This vessel was fitted with Babcock & Wilcox and Cylindrical boilers and after very careful tests it was proved conclusively that the Babcock & Wilcox boilers were superior both in efficiency and steaming capabilities.

The results of the tests were as follows;

	One-fifth Power		Full Power	
	Cylindrical.	Babcock & Wilcox	Cylindrical.	Babcock & Wilcox
Indicated Horse-Power........	3,634	3,759	6,686	7,510
Coal per indicated horse-power..........	1.8	1.74	1.88	1.67

The best proof of the reliability of the Babcock & Wilcox Boiler lies in the fact of their very wide adoption by both large and small steam users, witness such plants as, Manchester Corporation Electricity Works who now have over 55 of these boilers, Glasgow Corporation Electricity Works 45, Underground Electric Railway of London 65, Manhattan Elevated Railway of New-York 64, Interborough Rapid Transit Co. of New York 60, Third Avenue Railway Co. of New-York 31, City of London Lighting Co. 45, Metropolitan Electric Supply Co. of London 64, Metropolitan Railway of Paris 20, etc.

The Babcock & Wilcox Marine Boiler has been adopted and is being regularly fitted in the Navies of the British, United States of America, Italian, Danish, Norwegian, Brazilian, and Argentine Governments. A large number of cargo and passenger steamers, tugs, yachts and dredgers also have been fitted with these boilers.

LOW COST OF UPKEEP.—The British Admiralty Boiler Committee, reporting on the

THE TAAL DISASTER

At two-oclock, Monday morning, January 30, a fearful explosion occurred at the active volcano of Taal, the denotaion being heard at the most extreme points of the Philippines and many leagues to sea, and when the mists cleared away from the island and lake of Taal, the surrounding country was found desolate with many hundreds of bodies of natives killed by the gases, hot mud, and falling stones, with many buried under debris and mud who will never be numbered. Never in the history of volcanic activity in the islands has there been recorded a more serious loss of life. Even at the hour of writing the extent of the fatalities is not definitely known. Conservate estimates place the number at 800, while others claim that the list of the dead will reach 1300. The Burial Corps of the U. S. Army, Military, and Constabulary have been active for over a week seeking out the dead for burial and the injured for the hospital, while every effort has been made to succor the homeless and destitute. For miles around Taal Lake, volcanic mud covers the earth, fruit trees and crops have been destroyed, and what was once a prosperous thickly populated district, is now the picture of desolation.

Volcan Island, in the center of which the volcano of Taal is located, was inhabited by 400 to 600 natives living in several small barrios. Some reports place the number at 800, but of them all there were only ten accounted for and only one able to relate his experience.

But the devastation did not stop with the island. It was carried to the opposite shores of Lake Taal. Immediately following the terrible eruption, the waters of the lake were disturbed and a great wave swept the exposed barrios on the shores of the lake and, amid the showers of hot mud and stones, carried death and destruction in its wake

Of six barrios on one side of Volcan Island all had been entirely obliterated but one. The houses and occupants were completely buried.

The damage from the eruption and rush of waters on the lake shore is variously estimated, but as the relief parties extend their investigations the greater the evidence of damage to life and property. The barrios along the west shore of the lake and nearest the crater suffered most. Barrios were wiped out by the rush of waters and the natives living there died almost without warning. It is in this section, not yet fully exploied, that the large increase of fatalities over the first reports published are being uncovered. In one barrio alone 57 bodies were found by Captain Willis C. Metcalf, U. S. A., and as he proceeds up the west more and more bodies were found.

While the number of natives on Volcan Island is variously estimated the Bureau of Health reported 800 vaccinated there recently. If this be true there is a probability that list of fatalities on the island exceeded the number estimated above and with the dead found on the west coast the figures up to

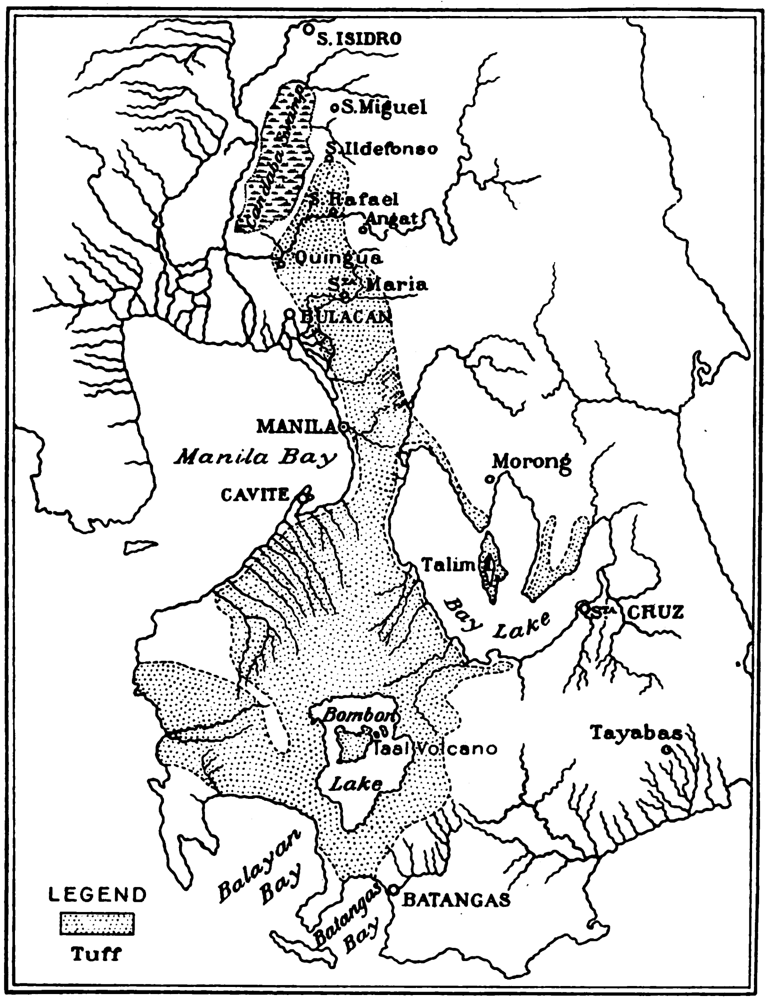


FIG. 8.—SKETCH OF THE TUFACROUS AREA OF TAAL VOLCANO, AS MAPPED BY CENTENO

1,000 might be considered conservative. The truth will no doubt never be known. Especially is this true of Volcan Island where the towns were buried completely many feet deep.

Taal became active several days before the terrible eruption January 30. Father Algue, Chief of the Manila Observatory, reported over 300 shocks, 54 of which were severe, previous to that time. These shocks were felt in Manila and the surrounding country but no damage resulted. Taal has always been more or less active and the natives paid little or no heed to its unusual activity. Since 1754 there has been no serious eruption. At that time damage was caused as far as Santo Tomas but the loss of life, due to a limited population, was very small. The natives in the vicinity were removed and for many years that section was deserted. The long period of quiet following this activity resulted in their return to this fertile region and probably no part of Luzon was more thickly populated when the disaster occurred.

Babcock & Wilcox Boilers in the S. S. Martello trading between England and the United States say: "This vessel has run about 91,000 miles since the boilers were put in and has usually been less than a week in port at either end, the only repairs required have been those of the ordinary upkeep of any boiler such as firebars, brickwork, etc.

For shallow draught steamers for river or estuary work, tug boats, dredgers, ferryboats, etc., this boiler is especially suitable, as for a given power it is lighter and being more economical of fuel than the ordinary boiler a greater radius of action can be allowed.

Steam can be raised in these boilers in a very short time, about ¾ hour, so that fires can be drawn when the vessel is at rest, thus saving a considerable amount of fuel and labour. In this connection it is interesting to observe that the London & India Joint Dock Committee fitted these boilers in their twin-screw tug "Hotspur" over twelve years ago and as the result of experience gained have since built three more tugs having these boilers. The London & India Joint Dock Committee have now been taken over by the Port of London Authority and they have recently ordered three more tugs of 1,000 Horse Power each to be fitted with the Babcock & Wilcox Boiler.

Over 10,000,000 Horse Power of the Babcock & Wilcox Boiler are at present in use or under construction, and at the present time the firm inform us that they are executing orders in their marine works alone for boilers for the following, three battleships of the improved Dreadnought type for the British Government, two cruisers for the British Government, one battleship for the Italian Government, two for the Argentine Government, one for the Brazilian Government, one for the United States Navy, some sixteen torpedo boats, as well as a cargo steamer, th ee tug boats, a ferry steamer and a floating dock, totalling about 500,000 Horse Power.

The Babcock & Wilcox Cos. have works at Renfrew in Great Britain, Oberhausen in Germany, Bayonne in the United States, and at Paris in France, and it is interesting to note employ some 8,000 men.

The interests of this large concern are represented in China by their office in Shanghai at 1a Jinkee Road.

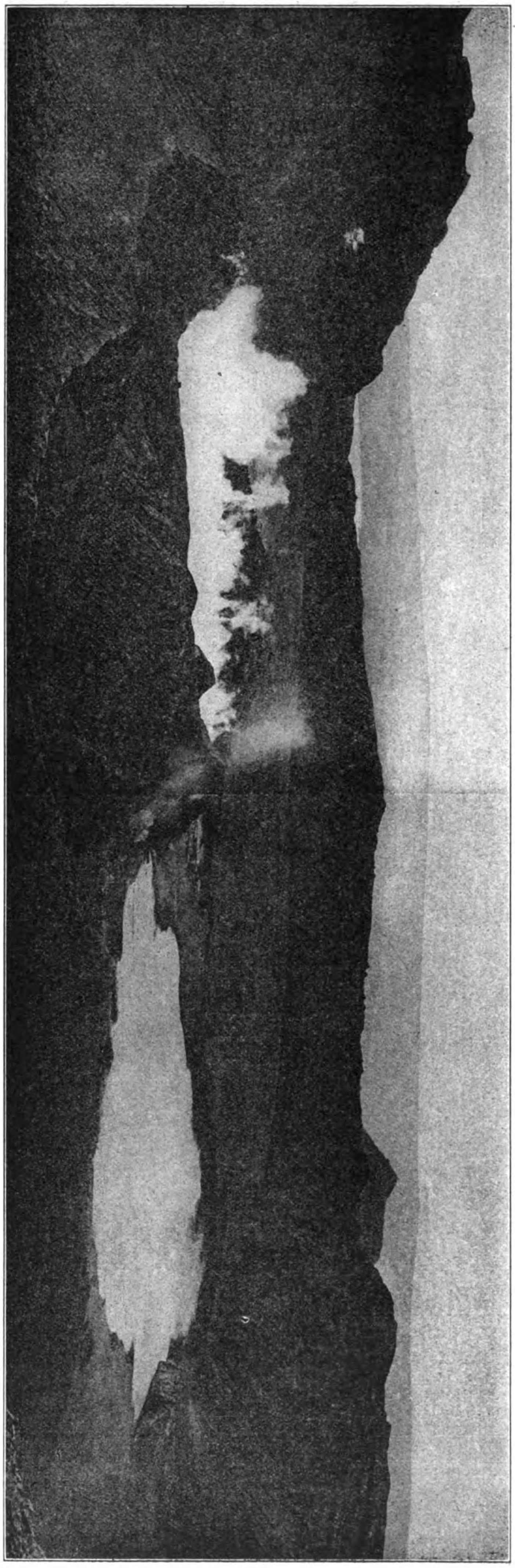


FIG. I. CRATER OF TAAL VOLCANO SEEN FROM THE EAST

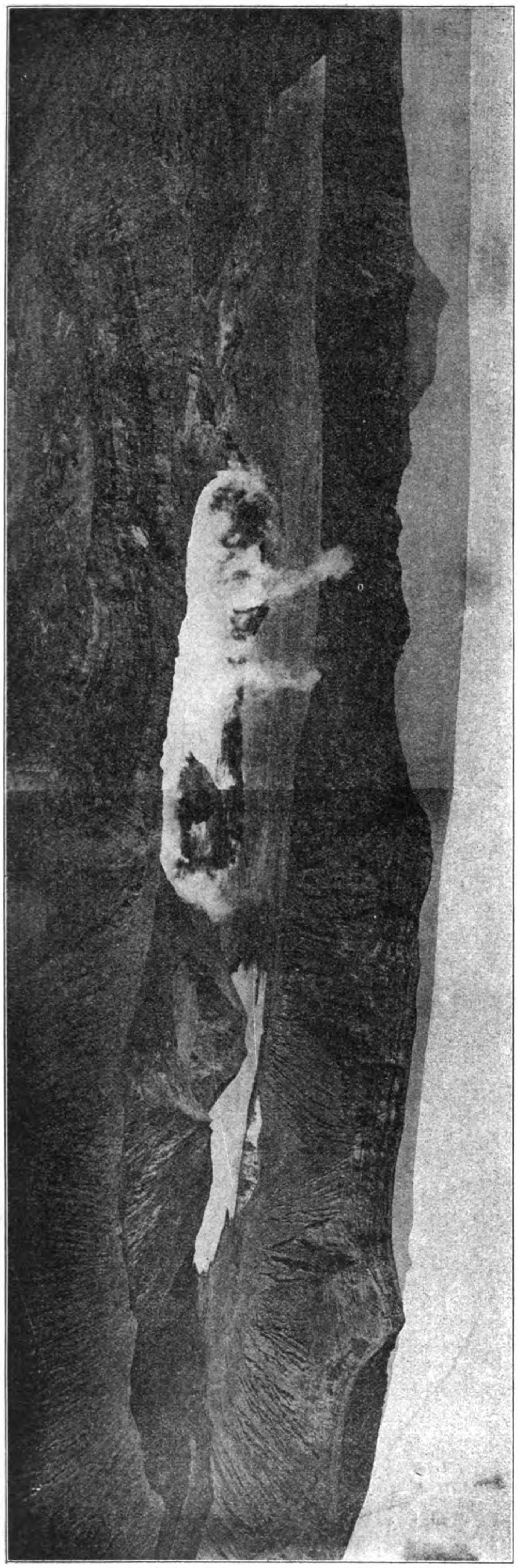


FIG. 2. CRATER OF TAAL VOLCANO SEEN FROM THE SOUTHEAST, THE 1904 CRATER IN THE LEFT FOREGROUND

Up to the present time over 900 seismic shocks have been recorded at Manila Observatory. Father Algue, who is an authority on earthquakes, is not convinced that the worst is yet over and provision has been made to prevent anyone from returning to the danger zone.

One striking feature of the recent explosion was an electrical display directly over the crater lasting over two hours. Of the 1754 eruptions Father Buencuchillo writes that for 70 days a similar electrical display prevailed throughout the entire period, many days being so dark that candles were necessary in midday. Father Algue reassured the inhabitants of Manila that while heavy shocks might be experienced the city would be in no danger but he reiterates the necessity of keeping away from the vicinity of the volcano.

HISTORY OF TAAL VOLCANO

In his paper on a "Geologic Reconnaissance of Southwestern Luzon", published in the Philippine Journal of Science in March, 1910, Mr. Geo. I. Adams, of the Division of Mines, covering a comprehensive description of the Southwestern volcanic region which includes Taal. Included are maps and illustrations which we reproduce through the courtesy of the Director of the Bureau of Science.

The southwestern volcanic region is described by Mr. Adams as consisting of "plains of volcanic tuff sloping towards the sea, Bay Lake (The Laguna de Bay) and Manila Bay". Again within this region "there are conspicuous mountains of eruptive rocks, volcanic peaks, the active volcano of Taal, a number of small crater lakes, and some extinct cinder cones." Among these Mr. Adams refers to the extinct volcanic cone northwest of Banahao, with three small lakes in its crater and Mount Maquiling near Los Baños on Laguna de Bay, all retaining some evidences of former volcanic activity.

The active volcano of Taal, which is located near the center of Lake Taal, would appear to be the center of this region. Mr. Adams describes the location as follows:

"Taal Volcano, surrounded by a number of small extinct parasitic cones, is near the center of an island in Lake Taal. The highest point of the island is on the southwestern rim of the crater, which reaches an elevation of 320 meters. The floor of the crater is about the same level as the water of the lake and but little above sea level. The country lying between Maquiling and Sosoncambing on the west and Cristobal and Banahao on the East may be called the crater lake area. "Within it, distributed in an irregular way, there are twelve of the lakes varying from a half to more than one kilometer in diameter. They lie in the tuff plains, their rims rising but a few meters above the general level of the country. Coconut groves and other vegetation disguise their presence so that passers-by on the road within a minute's walk of one of these lakes may not know of its existence."

Cinder cones are found northeast of Batangas, north of Rosario and south of Lipa. Tuluc Hill, between Santo Tomas and Calamba, is probably a cinder cone. Mr. Adams says:

"Indeed, Taal Volcano and Lake, the hot springs at Los Baños, the crater-lake country and falls and gorges, combined with the imposing views of the volcanic mountains, make this region one of the most inviting to tourists in the Philippines".

The extinct crater of Banahao has a large crater 210 meters deep and, according to the Estado Geografica, has been extinct since 1730 when it broke out in its southern part "vomiting torrents of water, hot lava and stones of monstroous size", but that there was really an eruption at the date mentioned there is much doubt. In 1909 an avalanche of water mud and stones descended from this crater into the town of Savaya, doing much damage but without evidence of eruption, the cause being laid to the choking of the outlet of the crater by a landslide. It is not improbable that the same causes led to the impression that an eruption occurred in 1730.

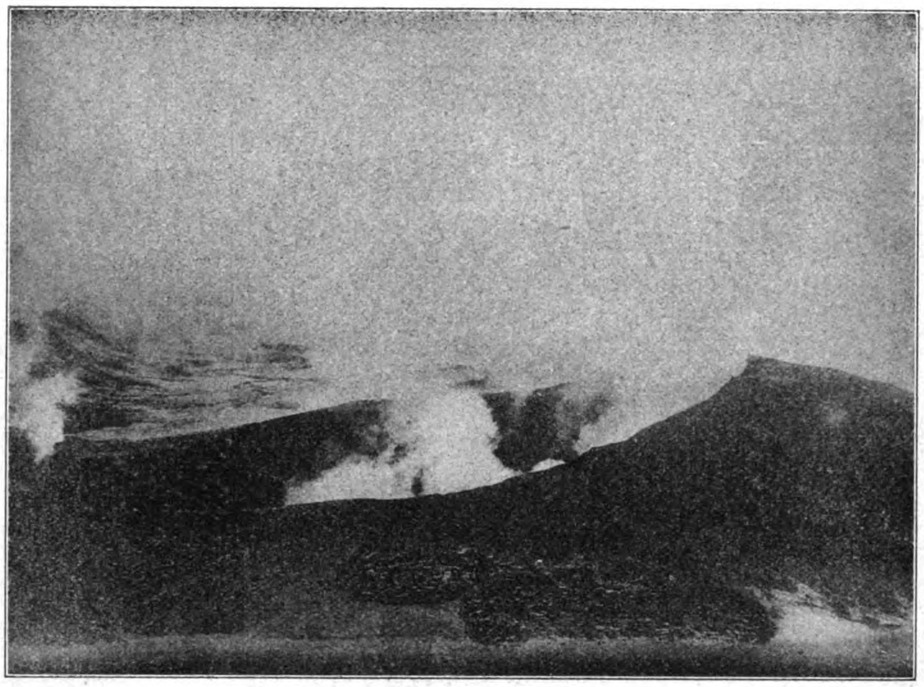


FIG. I. THE 1904 CRATER, SHOWING ERUPTED MUD.

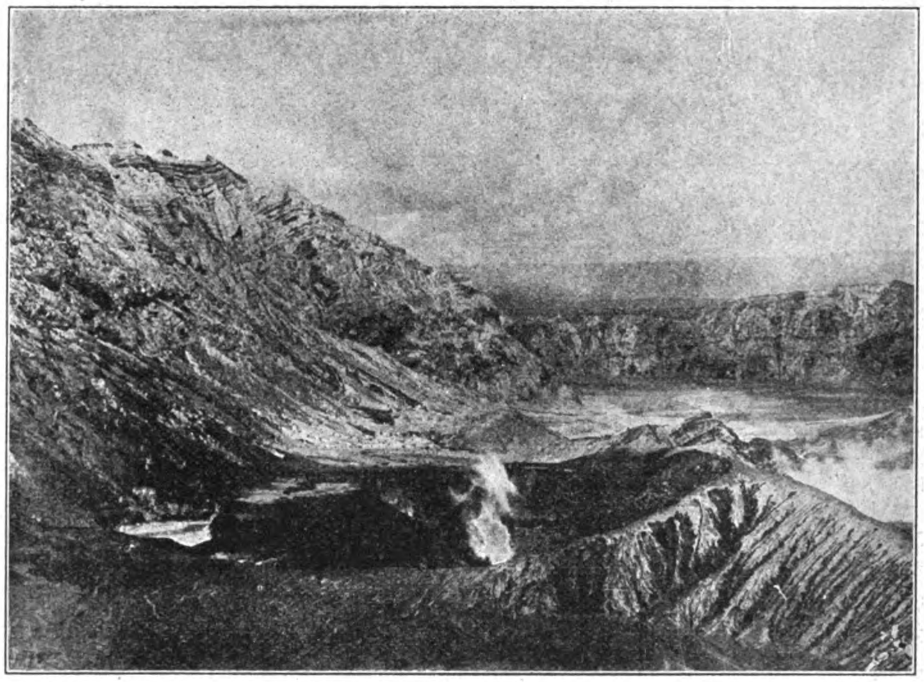


FIG. 2. THE 1904 CRATER QUIET.

Cristobal has a crater containing three small lakes and alleged activity of this extinct volcano is also explained by the breaking of natural dams at the outlet as with the Banahao.

Mount Maquiling is also considered an extinct volcano and is indicated by Abella as having the appearance of a crater broken down by erosion. Evidence of volcanic activity here is the crater lake called Laguna de los Caimanes on the border of Laguna de Bay west of los Baños and probably occupies the crater of an extinct cinder cone.

The Active Volcano of Taal.—Mr. Adams in his reference to Taal says:

"Taal Volcano is situated on an island in Taal or Bombon Lake. The island, on which are found a number of extinct cinder cones and the active crater, has been built near the center of the lake by late volcanic activity (Plate III). The main crater which is situated near the center is usually referred to as Taal Volcano. It is approximately circular in form. The southwestern border of the crater rim rises to an elevation of 320 meters, which is the highest point on the island. The lowest points on the rim are about 130 to 150 meters in elevation. The lowest points on the floor of the crater are about on a level with the water of Taal Lake. Visitors usually ascend the eastern side of the crater rim where it is low and near the shore; the most desirable time to make the ascent being about dawn and the rim should be reached by sunrise. The descent into the crater is by a steep zig-zag path, but presents no serious difficulties. During the first cool hour or so of the morning the vapors lie low over the lakes in the crater. On sunny days as the sun warms the air, the steam begins to ascend and the vapor and sulphur fumes are wafted about so that the view is not so clear and travel in some parts of the crater is made difficult and even dangerous. When the atmosphere

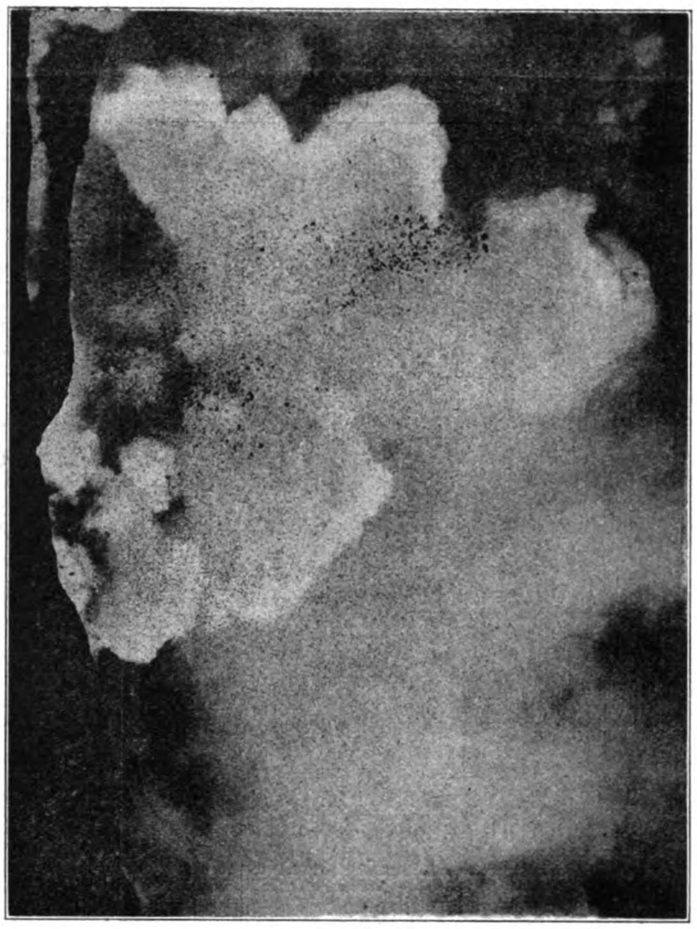


FIG. 1. THE 1904 CRATER BLOWING OUT STEAM AND GASES JULY 4. RED LAKE IN FOREGROUND

FIG. 2. THE 1904 CRATER ERUPTING STONES. JULY, 1901

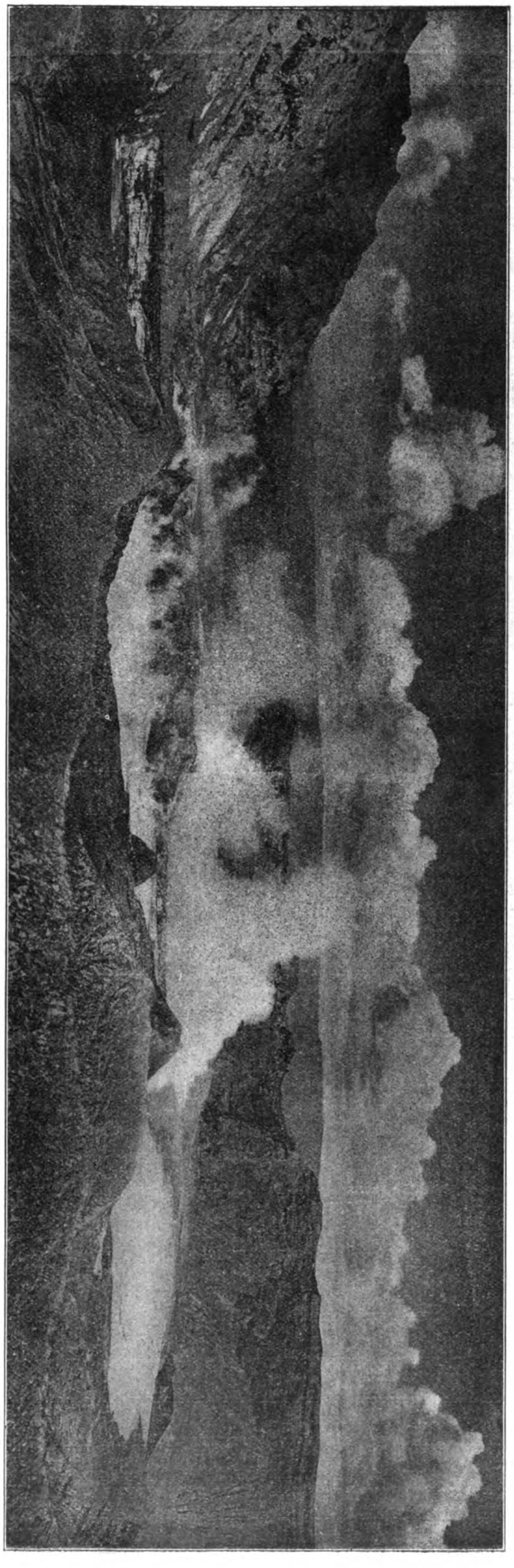


FIG. 3. PANORAMA OF TAAL CRATER. NEW CRATER FORMED IN 1904 SHOWN TO THE LEFT

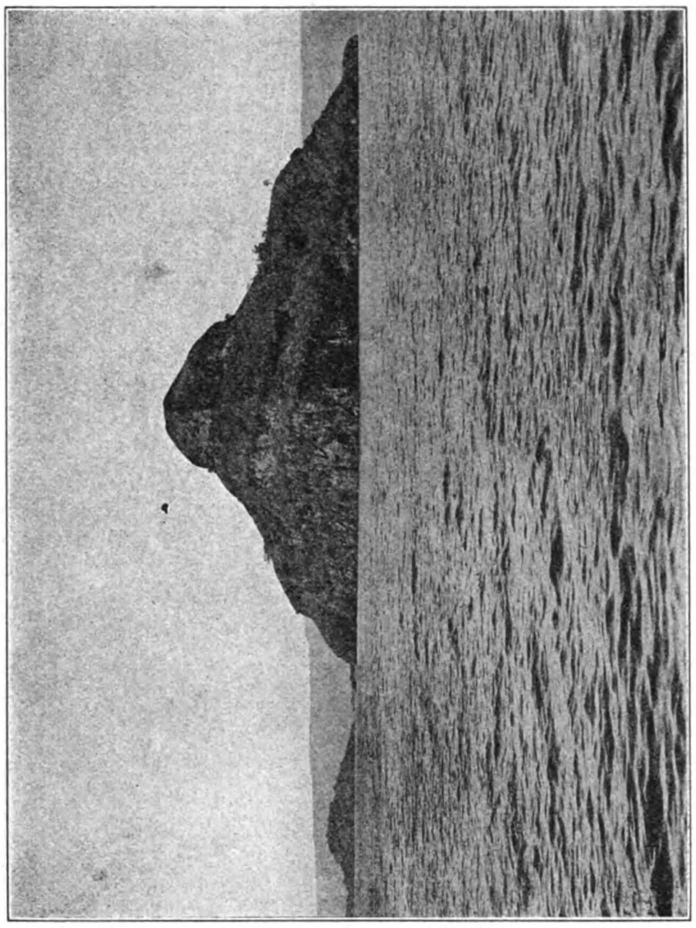


FIG. 1. NAPAYONG AND BUBUING ISLANDS IN TAAL LAKE, AS SEEN FROM LIPA POINT.

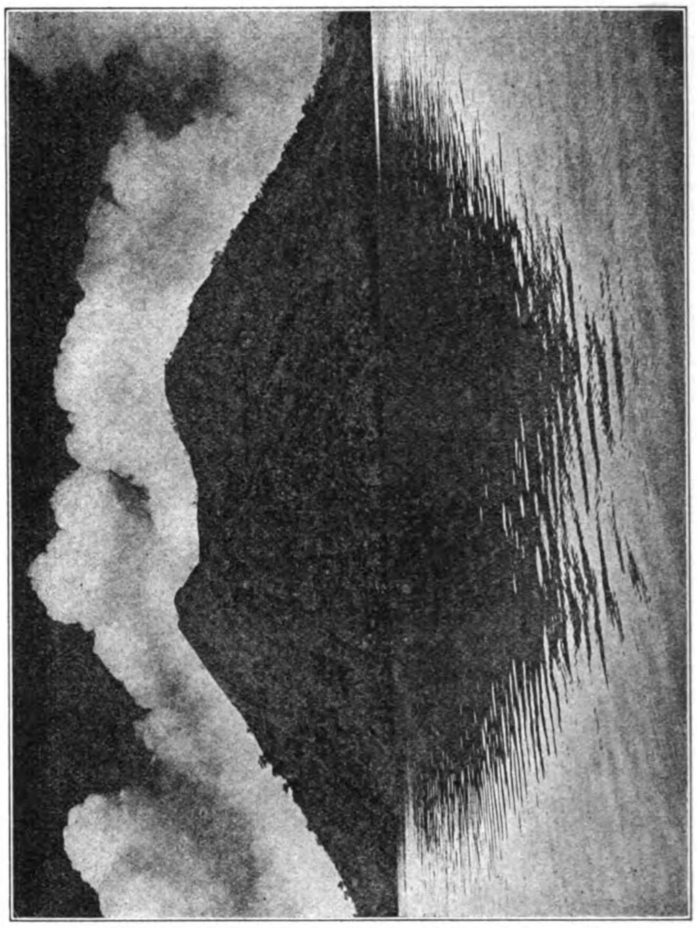


FIG. 2. THE CONE BININTIANG MALAQUI ON THE NORTHWEST POINT OF TAAL ISLAND.

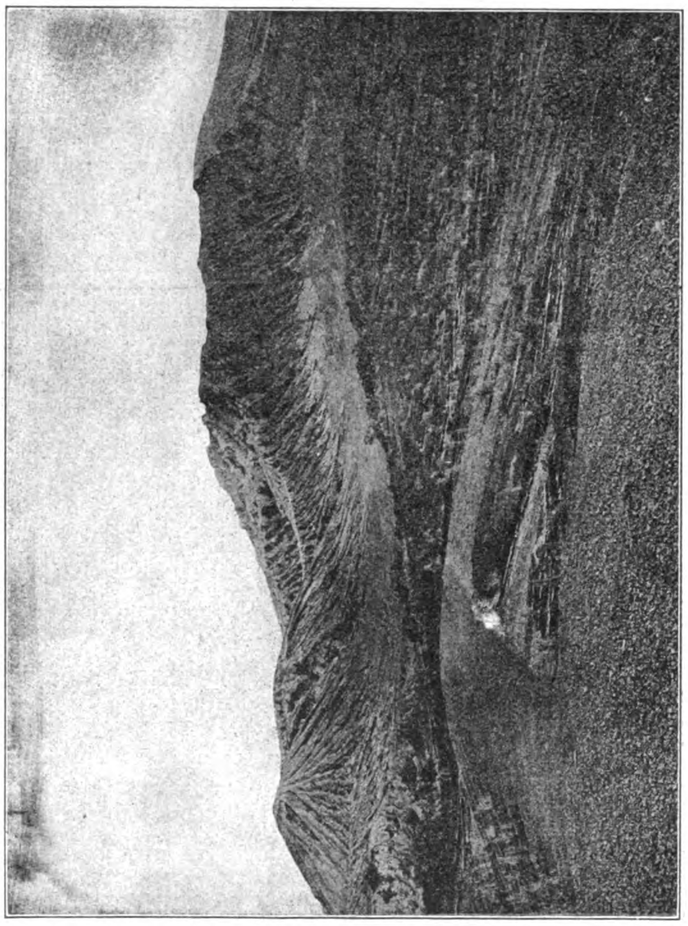
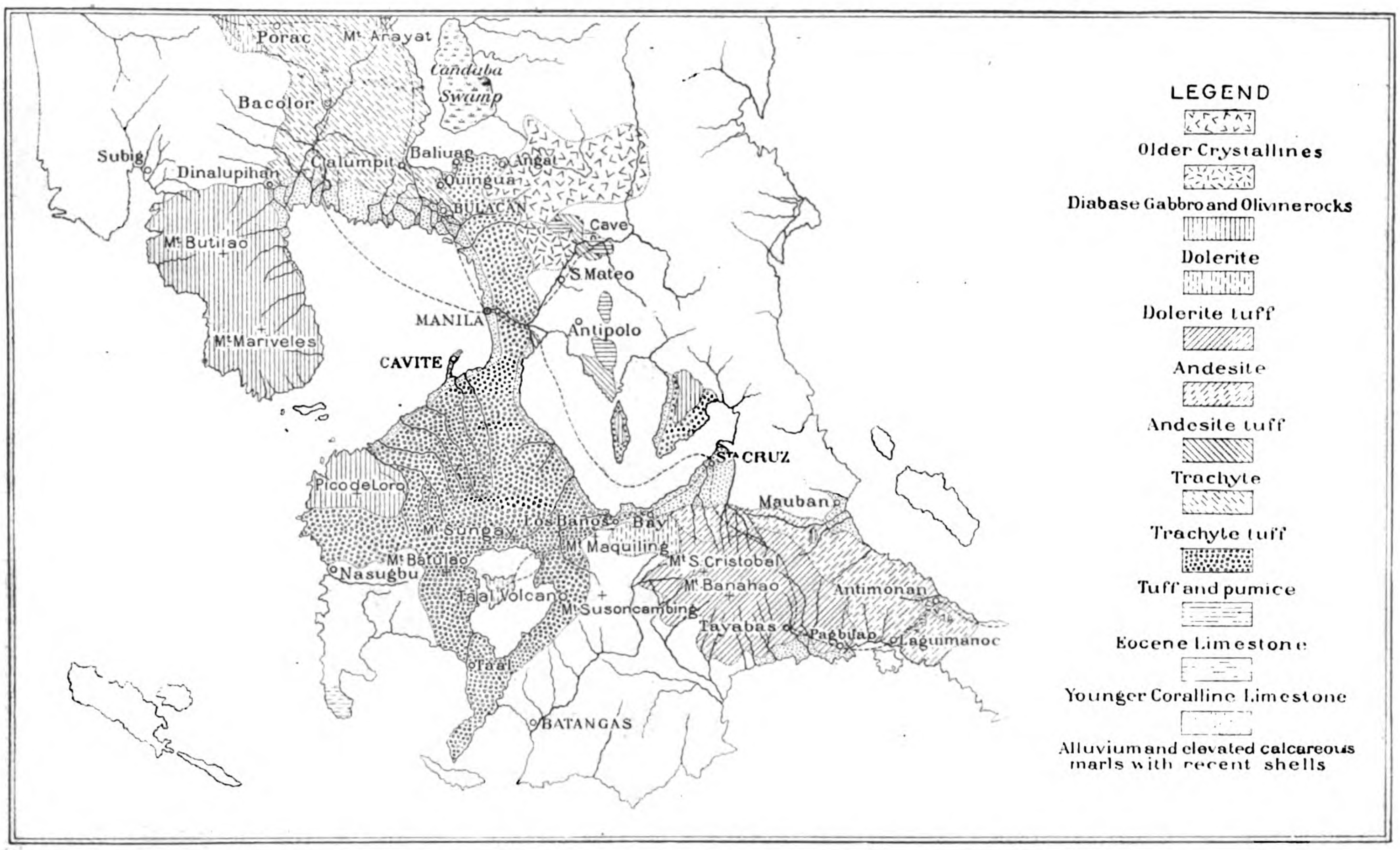


FIG. 1. EROSION ON OUTER SOUTHERN SLOPE OF THE CRATER OF TAAL.

FIG. 2. EROSION ON EASTERN INNER SLOPE OF TAAL, SHOWING BEDDING IN CRATER RIM.

is warmed by the sun, the steam from the green lake usually rises and forms a mushroom shaped cloud which soon becomes detached from the column of vapor which forms its stem. As the heat of the day advances the vapors become more attenuated and are blown about the rising wind, but before this time the visitor should have left the crater if he wishes to avoid an arduous climb in the hot sun. On days when the sky is cloudy, the crater may be explored more at leisure.

"Two lakes lie within this crater. They are usually called the yellow lake and the green lake. During the rainy season there is a third temporary red lake. The yellow lake receives the natural drainage of the crater. It appears to be shallow and is hot, but does not boil. The green lake gives off steam from its surface and near its southern border boils violently as if over a vent. A circular crater is located to the south of the green lake. On its floor there are several boiling mud spots from which but little vapor rises. On the south border of the yellow lake there is a cone, called the red cone, because of the color of its crater. It is broken down on the south side and drains around its eastern base into the yellow lake. A vent from which steam issues with great force occurs on its northern outer base. The yellow lake now extends to this vent but formerly was



SKETCH SHOWING THE GEOLOGIC MAPPING OF SOUTHWESTERN LUZON, BY VON DRASCHE

separated from it by a narrow isthmus. There is a remnant of an older, large crater rim which forms a crescentic ridge rising southeast of the yellow lake and curving around to the south of the green lake, passing between the green lake and the crater with the mud spots. Visitors to the volcano usually travel on this ridge when exploring the crater of Taal, since it affords a fine view and an easy means of approaching the principal points of interest. The ridge is very narrow between the green lake and the crater containing the mud spots and care must be taken that the wind is not blowing the steam and sulphur fumes in such a direction as to cause them to inconvenience or overcome the visitor. There are small cracks in this ridge from which sulphur fumes issue and at its western end, which is south of the green lake, a descent and detour may be made to the south to reach the remnants of some extinct cones which have level floors. Sulphur fumes and a little steam rise from the cracks in their walls and floors.

"The layers of tuff exposed in the inner wall of the outer crater exhibit bedding and show a banding of colors varying from whites and grays to yellows and reds. The colors are especially vivid on the walls near the points of activity where the hot acid vapors are sublimed on the rocks, forming an efflorescence of iron, aluminium and magnesium sulphates and chlorides producing variegated white, yellow, red, blue and green effects. Small amounts of native sulphur occur in crevices and cavities, but it is inconspicuous.

"In 1880 Centeno visited Taal Volcano while studying the effects of the severe earthquake of that year, and found that the volcano showed no signs of increased activity. From his sketches of the appearance of the volcano and his description we learn that there was at that time one active cone sending up a great quantity of vapor. This active cone seems to correspond with that of his description written in 1882 and is now the crater containing the mud spots. Near the active cone there were some smaller ones which are shown on one of his sketches as giving off thin columns of vapor.

"The yellow lake is described as containing a place near its center where the water boiled up violently and occasionally threw up black mud and sent out waves which agitated the surface of the lake.

"In 1882 Centeno made a study of Taal Volcano and his report is accompanied by a small hachured map which shows most of the features quite clearly. A model of the volcano inherited from the *Inspección de Minas*, is in the division of mines. It is probable that the model was based on the map or was made at about the same time. Studying the model, which is somewhat clearer than the map, but one defect is found which can not be reconciled with the present features of Taal or be accounted for by subsequent changes. The model shows the crater of the red cone as being broken down on the side toward the green lake. As it now exists, it is broken down to the south and drains around its eastern base to the yellow lake.

"Making due allowance for the imperfections of the model and map certain changes have taken place since Centeno described the volcano. The green lake has extended its area to the southward and contains a point where there is violent boiling. The neck of the peninsula which extended into it from the east has been eroded, leaving the point as a pyramidal rock or island in the lake. A steam vent and a sulphur dioxide gas vent separated by a distance of about 15 meters and evidently not connected near the surface have formed at the north base of the red cone. The small inactive cones

(Continued on page 322)

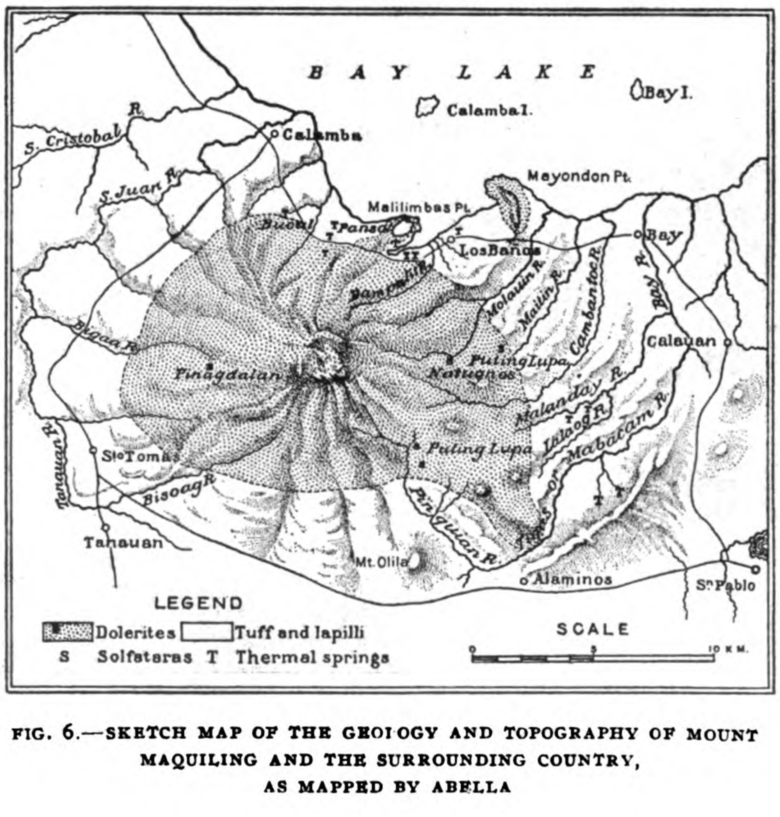
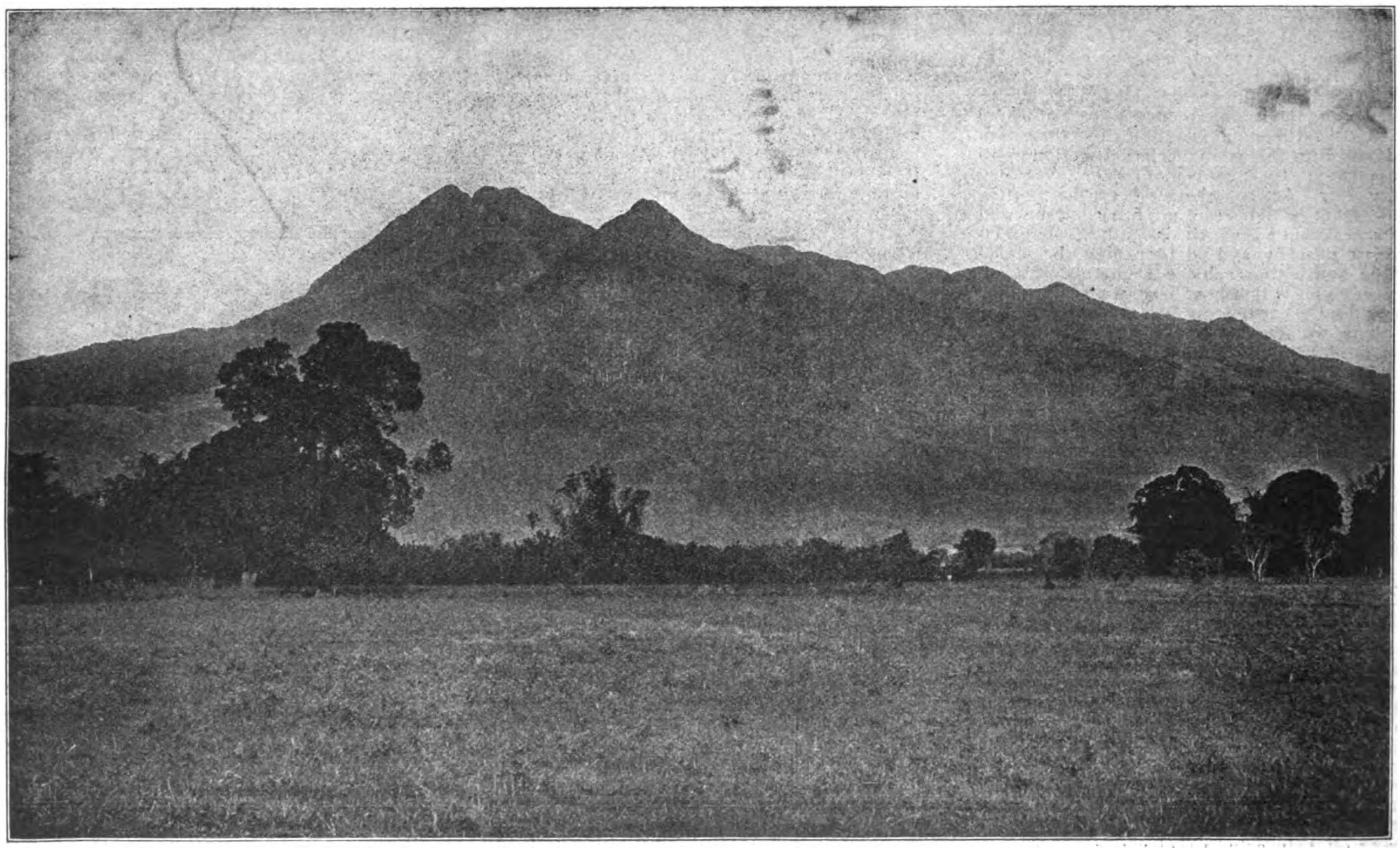


FIG. 6.—SKETCH MAP OF THE GEOLOGY AND TOPOGRAPHY OF MOUNT MAQUILING AND THE SURROUNDING COUNTRY, AS MAPPED BY ABELLA

TAAL VOLCANO AS SEEN FROM BAÑADEROS WHEN THE STEAM RISES IN THE MORNING.



MAQUILING MOUNTAIN AS SEEN FROM THE RAILWAY STATION AT SANTO TOMAS.

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.
PUBLISHER
WILLIAM CROZIER, Editor.

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CONTENTS

	Page
The Maine: Thirteen Years After	299
Lengthening of a Steel steamer	304
Yunnanfu Electricity Works	305
The West Siberian Railway	306
Water Tube Boilers	306
The Taal Disaster	308
American Capital in the Philippines	315
The Twin Screw Motor Boat Sumatra	319
The Launch Fong Fee	319
British and Foreign Shipping 1909-1910	319
President Godfrey's Address Before Society of Engineers and Architects	320
The Present Status of Mining in the Philippines	321
Reviews	322
Contracting News	323
Philippine Mining News	323
Far Eastern Railway News	324
Far Eastern Engineering, Construction, Commercial and Financial News	325
London Metal Market	327
Far Eastern Share Quotations	327

AMERICAN CAPITAL IN THE PHILIPPINES

With one exception it may be said that Philippine development schemes have met with a cold reception from the financial interests of America, and the repeated failures in promoting or financing any project for the Islands is a matter that must receive the serious consideration of the Philippine Commercial Community with a view of improving the condition and eradicating the obstacles. The Islands present opportunities for rapid and profitable development unequalled in the world. The wealth of the tropics is concentrated within their limits. Rich mineral deposits abound, the forests of valuable hard woods are inexhaustible, the sugar lands yield a high average, the hemp monopoly is source of never ending profit, rubber and gutta percha thrive and give handsome returns, but with few exceptions these immense natural resources, after twelve years of American rule, are still worked in the old primitive, wasteful manner which marked the industry of a century ago. It is a severe criticism and reflection on American energy, which permits such untold wealth to remain undeveloped, and is a striking anomaly to American enterprise in Alaska, Hawaii, Porto Rico or Cuba, and a contrast to the methods of Europeans in neighboring countries and Islands. Java is a tropical paradise, and yields immense wealth to the Dutch investors, made possible by the paternal solicitude of the Government. Borneo is forging ahead, and many large enterprises are in successful operation. The story of the industrial development of the Federated Malay States reads like a chapter from a romance, or the Arabian Nights, and rubber kings have supplemented the old time tin millionaires.

Sumatra is famous the world over for its cigar wrappers, and tobacco plantations have spread to neighboring isles. Petroleum abounds, and even Shanghai has its quota of millionaires made rich over night as it were, by the marvellous wells. Indo-Chine is the rice granary of the Orient and exports its products to the Philippines, and Formosa under Japanese rule, contending with adverse climatic conditions, has developed a modern sugar industry, which shames the Philippines and bids fair in time to rival Java. Not one of these countries can compare in natural gifts with the Philippines, yet they progress and prosper, while the Islands fail to keep pace with the procession. It is time for those who have cast their lot with the Islands to face the problem, seriously consider the question, and try to overcome the difficulties surrounding the investment of American capital in the Philippines and divert the stream which flows so freely into other territorial possessions.

The lack of confidence in the Islands may be traced to various sources, each of sufficient importance when considered by themselves to weigh against the investment of capital. First, and most important, is the political phase. The promise of the Government that the Islands will be granted full independence when, in its opinion, the people are educated and prepared for self government, underlies the entire fabric of native politics and gives strength to the anti-imperialists at home. Native politics, stripped of all superfluous verbiage, is reduced to the issues of immediate independence as against following the tutelage of the United States, until its Government is ready to redeem its promise. Every native office holder, elected by the various independence parties, during his term of office makes some play to the gallery to preserve his reputation and insure re-election, and at regular intervals this takes the form of an appeal to America for immediate independence. And the anti-imperialists and democrats at home for political purposes indorse the appeal to embarrass the Republican Administration. The papers seize on it as important news, and keep the issue before an indifferent public, who, after reading, promptly forget that there is such a group of islands as the Philippines. But when someone approaches the investor with a Philippine development scheme, his brain is stirred to action, and forgetting the details, he remembers the essential fact, that the Islands are to be granted Independence someday and he forthwith refuses to entertain any proposition not likely to remain under the flag. And no amount of explanation or argument can shake that fundamental fact. So at the root of all the trouble lies the professed policy of the Government.

Another and more serious aspect of the political phase is the constantly recurring war scares with Japan. About the time an issue of Philippine bonds is offered for sale, or a promoter is striving to interest capital in Insular ventures, the newspapers at home publish some highly important interviews, disclosures or articles by special writers, to the effect that war between America and Japan is inevitable, and as a first step the Philippines will be sacrificed or captured. And the price of the bonds fall in consequence, and the promoter sees the hard work of months disappear, and has to begin all over.

Notwithstanding that no issue exists between Japan and America calling for a break in their friendly relations, and despite the fact that the higher officials of both nations realize the danger of such unprovoked and unnecessary scares, which only excite public opinion and create distrust when none before existed, the "advance agents of Armageddon" return to their obsession, and keep the public mind inflamed. When no legitimate issue or cause for friction can be discerned, along comes a writer who unhesitatingly declares that the genesis of any war between America and Japan will arise out of Manchuria, and then proceeds to prove his conclusions, winding up with the capture of the Philippines by Japan. When the first issue of Philippine railway bonds was on the New York market, and conditions seemed favorable for a successful and profitable flotation, Mr. Millard's articles appeared in a leading *New York Daily*, and their price dropped several points and has never recovered. Again when the market was tranquil, war scares forgotten, and another issue ready for subscription, America was invaded by the English writer "Putnan Weale" who in lectures and articles revived the issues, and told the country that "America must curb Japan."

Why America should assume the sole responsibility for preserving the integrity of China, when all powers are equally interested in maintaining the status quo, is something only writers like Mr. Millard or "Putnan Weale" can explain. And when no definite issue is discernible, the war mongers revert to the supremacy of the Pacific. Some gifted editorial writer, a few years ago, coined the phrase, "Hegomony of the Pacific," and now when all other arguments fail, the Hegomony is duly resurrected, brushed up, and made to do extra duty in explaining why America must defeat Japan. America has survived for over a century, without the Hegomony of the Atlantic or coming in conflict with or disturbing the power that holds this traditional advantage. Why America should go to war to preserve in the Pacific, something she does not possess in the Atlantic, is a point which seems to be overlooked, for the same strategical reasons apply to both Coasts. But these arguments are highly instructive and make fine reading and do no harm—except to the Philippines.

This phase of the situation is therefore serious; and one which the Government and Insular interests are powerless to check.

Another reason why capital is reluctant to enter the Islands for industrial enterprises, is the difficulty of securing an adequate and continuous supply of labor. There is no use in disguising this fact, and deluding ourselves that it does not exist, for it does. Labor exists in the Islands for all practical purposes, but it has to be educated, and forced to recognize the advantages of honest toil. Americans in the Philippines are just commencing to learn what the British and Dutch forgot a century ago—that the Malay won't work. And so long as he can recline in a hammock under the shade of a banana tree and reach up and pluck a meal overhead, or dig a yam or sweet potato out of the ground with his toes, and force his wife to catch a few little fish to mix with his mess of rice, there is little inducement for him to be otherwise. The Dutch solved the problem in Java by compelling them to labor, and in the Malay States the Chinaman has been the mainstay of all industry. This is an another obstacle to the investment of capital in the Islands, and is traceable directly to the altruistic policy of the Government, which says that the land must be preserved for the original inhabitants, and not delivered over to the Chinese and other industrious Oriental laborers. And until Congress modifies its general policy, our only hope lies in the industrial education of the people, and the awakening of them to a realization of the opportunities they are wilfully neglecting.

Another potent factor operating against the investment of American capital in the Islands is the loss of confidence in Insular securities due to their decline in value. When the investor sees Philippine Government 4% Gold bonds decline from 114 to 100 within a few years, he naturally associates this apparent waning of the credit of the Islands with some important political complication, for which the Japanese war bogey and Manchurian nightmares are largely responsible. The Philippine Railway 4% bonds, which are guaranteed, and which sold at 96.5 and interest in 1908, at present have no market at 87. This great decline in values, without any logical cause or disturbance of the Insular credit, is a serious handicap to the further progress of development, for it is quite clear that the holders of these securities have a most unfavorable opinion of investment in the Islands. As these securities are largely held at home and abroad by investors whose influence is of some weight in financial circles, their pessimism has influenced many others against taking up Philippine investments, thus creating a condition that no amount of "boosting" or publicity propaganda can overcome.

This decline in the price of standard government guaranteed bonds to the extent that no market exists for their sale, makes it next to impossible to secure new capital for Philippine enterprises. Here is a situation which must be faced, and some remedy applied to the evil. Nearly all Philippine enterprises in the very nature of things are industrial or construction propositions which limit the market for their securities. The geographical location of the Islands makes it impossible for the average investor to have any accurate knowledge of the actual condition of affairs, or the value of the securities offered, and when he is approached by the promoter to participate in some venture, he naturally turns for guidance and advice to those who are already heavily interested in Insular securities. This rule holds good all over the world, for we find that the enterprises of different countries must be financed by or have the approval of the certain group of bankers who specialize in the securities of the respective countries. All propositions of a special character inevitably find their way directly or indirectly to these financial interests, either for cooperation or indorsement. Investors come to look to them for guidance in investments in these special fields, and refuse to consider any proposition which does not emanate from, or at least have their cooperation. And Philippine investments follow the rule of the world, and have their recognized financial authorities at home, whose cooperation is necessarily vital to the successful flotation of any large enterprise for the Islands.

The bankers and their friends who have been interested in the largest and most important undertakings thus far financed at home, have not only found indifferent success in placing Philippine securities, but have met with loss in their ventures. Not only have they contended with a limited and unsympathetic market, but have had to fight against the unfavorable impression created by the falling prices of the Philippine Government Bonds, and witness their own securities decline far below the prices which they paid for them. And now when new Philippine enterprises are placed on the market, and the investor turns to them for advice, is it reasonable to hope that they will be loud in their praise of the Islands, or that they will feel inclined to take the initiative or cooperate in further financing under present unfavorable conditions?

So we find that the various political phases of the situation have resulted in a material decline in the value of Philippine securities. The bankers and their friends who purchased the bonds are in turn unsympathetic, and their attitude finds reflection among the "men in the street." Many who might consider Philippine Bonds at current prices as a cheap investment, are deterred from purchasing them by the knowledge of the difficulty they would experience in selling, if they should later require the money for other purposes. And we cannot delude ourselves with day dreams or be led astray by the temporary hurrah of a publicity meeting or a successful carnival, for so long as these conditions continue to exist it will be practically impossible to secure adequate support for the numerous enterprises and developments which must be undertaken if we are to witness in the next decade

the material development of the Philippines which all interested are working so hard to bring about.

COMPARISON OF GOVERNMENT BONDS

	%	Average Annual Price 1909.	Present Market Price.	Average Annual Price '09 Reduced to a 3% basis. %	Present Market Price Reduced to a 3% basis. %	Real Interest earned at 1909 average Market Price. %	Real Interest Earned at Present Market Price. %
English Consols.........	2 ½	83.76	79	100.52	94.94	2.98	3.16
Fr. rentes.....	3	97.20	97.97 ½	97.20	98.04	3.09	3.06
German Imperial loan..	3 ½	95.11	92.	81.52	78.12	3.68	3.84
German Imperial loan ...	3	84.71	83.	84.71	83.18	3.54	3.61
U. S. Debt.....	4	119.11	115 ¼	106.17	103.53	2.52	2.70
"	2	101.47	100 ¾	118.45	116.72	1.92	1.96
"	3	101.75	100 ¾	101.75	100.75		
Panama.......	2		100 ½		120.27		
Panama....... (1936)	2		100 ½		120.27		1.98

It should be noted that there has been no fundamental change in the intrinsic value of Philippine bonds. The question of whether any remedy can be found for these conditions is one of pressing importance to the commercial interests of the Philippines. Fortunately, we find in the conduct of the United States government finances a parallel and example which seems to offer an adequate solution of the difficulties which confront us here. For many years the United States treasury has been able by a very simple but arbitrary method to sustain the prices of its bonds, advancing them whenever it had any to sell.

The prices of the United States government bonds are not determined by the ordinary investment demand, which supports the interest bearing debt of other countries. The credit of the United States, although admittedly the highest in the world, does not warrant the sale of United States Bonds at prices yielding 2% and less, while British Consols sell on a 3.16% basis and French Rentes on a 3.06 basis, and other absolutely safe investments yield at least twice as large an income.

STANDARD RAILROAD BONDS YIELDING OVER 4%.

	Present Price.
Atchison, Topeka & Santa Fé General 4s......................	98¼
Chicago & North-western General 4s..............................	98¾
Reading Co. General 4s............	98
Union Pacific First & Refunding 4s..............................	96¾

It is only possible for the United States to borrow money at such low rates because of its national banking system, under which the national banks can issue currency secured by an equal par value of Government Bonds, and through the policy of the United States Government in depositing its surplus funds in national banks and requiring Government bonds as collateral. It is this latter feature which has given the Government in the past a powerful lever on the market for its securities.

Before examining the mechanism of this system it would be well to refer to a few figures. The interest bearing debt of the United States now approximates $913,317,490, of which $696,200,790 bonds or about 76% of the total debt is on deposit at Washington to secure circulating currency; a large proportion, which cannot be estimated exactly, is held by estates and individuals who desire the "safest investment obtainable" no matter what the price. In a general way, the proportion of bonds held to secure currency and for private investment is constant. Between these two classes of holdings there is what may be termed the floating supply.

The surplus funds of the United States are not permitted to lie idle in the treasury but are deposited in the national banks. It is this system of depositing government moneys against suitable collateral which forms the powerful auxiliary to the currency system in regulating the demand for, and the price of, government bonds.

The Secretary of the Treasury has the absolute power of determining what collateral he will accept to secure these deposits. Of course United States bonds are always given the preference, but when the government's deposit with the banks is so large as to cause United States bonds to sell at too high prices he may order the acceptance of other securities as collateral, including territorial, state, municipal and railroad bonds. A few actual operations of the Government will serve to show how this system works in practice.

In 1906, when the first issue of Panama Canal 2% bonds was offered for sale, the then prevailing prices of United States 2% bonds indicated that the Panama bonds would only bring a very small premium as they would undoubtedly sell on a parity with the Consol 2s. The Secretary of the Treasury thereupon issued an order that banks having bonds other than United States government bonds or territorial issues to secure their deposits must substitute for such issues United States government or territorial bonds. The effect of this action upon the market for government issues was instantaneous and advanced their prices so materially that the Panama sale was extremely successful and netted the government a premium of over four points.

A short time after the Panama sale, government deposits increased to such an extent that it was considered reasonable to again accept railroad, state and municipal bonds as collateral. Then came the acute monetary situation which culminated in the panic of 1907. Government deposits with the banks were immediately increased for the purpose of relief to an unprecedented figure, reaching a total of $223,117,082 in December 1907. At that time the prices of United States bonds would of course have been advanced to unusually high levels had not the Secretary of the Treasury accepted state, municipal and railroad bonds as collateral.

The effect of the panic upon the government's income was no less marked than upon the industrial income of the country in general. Imports decreased heavily and the monthly treasury statements showed a rapidly increasing deficit. Consequently it became necessary to withdraw government deposits from national banks. Within a period of seven months deposits fell from a total of $223,117,082 to $118,576,923, and by September 1909 had fallen to $35,228,921, which was as abnormally low as the former figure was abnormally high. The rapid withdrawal of deposits resulted in flooding the market with government bonds. This was due to the fact that the banks naturally preferred, as their deposits were reduced, to withdraw and sell their government bonds and leave the state, railroad and municipal securities, which yield twice as much income to secure the balance of their deposits.

Here again the power of the government to sustain the prices of its bonds is illustrated. Secretary Cortelyou, in order to relieve the pressure upon the government's bond market, issued an order requiring banks to release railroad, state and municipal bonds prior to government or territorial issues as their deposits were reduced. The text of this order follows:

"The Treasury Department, when the deposit of public moneys with the various national banks is reduced, will require that bonds other than the following be first withdrawn: United States, Philippine, Philippine Railway, Porto Rican and Hawaiian."

When Mr. MacVeagh became Secretary of the Treasury he reinforced this order by giving notice that thereafter only United States government and territorial bonds would be accepted as security for deposits. The arbitrary power of the government in these matters is best shown by the terms of the ruling, as follows:

"The Secretary of the Treasury today announced, in accordance with the act of Congress approved March 4, 1907, that when further public deposits are made with banks the following named bonds and no others will be accepted as security for such deposits:

"United States, Philippine, Porto Rican and District of Columbia bonds at par: bonds of Hawaiian Territory at 90% of par: bonds of the Philippine Railway at 90% of market value, but not exceeding 90% of par.

"No additional deposits are, however, in contemplation.

"All banks holding deposits of public funds secured by any bonds other than those above named as acceptable will be required to withdraw such bonds on or before February 1, 1910, and substitute therefor bonds desciibed above."

These measures, however, have been of no avail because at the present time government deposits amount to but $36,836,471 and are too small in relation to the floating supply of government bonds to do much towards sustaining their market. This situation is largely due to the use of the government's current receipts to build the Panama Canal. Practically no improvement in the situation can be looked for until the United States treasury is again in funds sufficient to deposit in substantial amounts.

It would be well to point out here that even if the United States government were to make large deposits, accepting the bonds declared to be suitable collateral in the recent order given above, the Philippine securities would not be benefited materially thereby. This would be due to the fact that under this order a bank is given the privilege of choosing between United States and Philippine bonds when selecting the securities to be used as collateral for government deposits. In selecting bonds for this purpose a bank considers first, marketability; second, stability of price; third, opportunity for profit.

United States bonds of course have a wide and active market capable of absorbing with ease the sale of a large amount of bonds at any time. Banks buy them in anticipation of their use as collateral for government deposits. They have shown an excellent record in respect to their prices which are practically unaffected by market conditions, having regard only to their use as security for government deposits and for the issuance of banknote currency. Turning to the Philippine bonds, we find that the purchase by a bank of these issues at present prices would be a much more profitable operation than the purchase of United States government bonds. The difficulty, however, which precludes all possibility of a bank selecting these bonds for this purpose is that they do not have the first two requisites, namely marketability and stability of price.

Having seen how the United States regulates the prices of its securities through the medium of its deposits with the banks, and realizing that practically no assistance can be looked for from that government, it is important to learn how this system could be applied by the Philippine government to the advantage of its own securities.

The means at the disposal of the Philippine government should be effective for this purpose. At the present time the Philippine government has $15,000,000 on deposit with banks in the United States. The total funded debt of the Philippine government, including the Land Purchase and City of Manila bonds, amounts to about $16,000,000, and the bonds which are guaranteed as to interest by the Philippine government to $9,943,000, making a total of $25,943,000 bonds now outstanding.

Of the former it is safe to assume that at least 50% are securely placed in the United States and would not be apt to come into the market. Of the latter probably an equal proportion was placed in Europe by bankers, and the class of European investors who purchased these bonds are notoriously close holders. In short, it is probably a very excessive estimate to say about 50% of the funded obligations of the Philippine government is likely to contribute to the floating supply, and of course, only a small percentage of this amount would be likely to come into the market at any one time. Consequently it will be seen that a moderate amount of purchasing power would be apt to advance very quickly the prices of these securities.

If the Philippine government were to profit by the example of the United States government and give preference to its own securities in naming the collateral acceptable as security for its deposits, the problem of prices for its bonds would be largely solved. It would be well to note here that at the present time only $441,000 Philippine Government and $252,000 interest guaranteed bonds are among the collateral securing the deposit of about $15,000,000 of Philippine funds. This fact proves that a bank will not buy Philippine bonds unless the government requires their use in preference to other securities. It would not be necessary to insist arbitrarily that the only acceptable collateral would be Philippine government or interest guaranteed bonds. It would be sufficient for the Insular Treasurer to require that the deposits be secured preferentially by

(1) Philippine Government bonds.

(2) Bonds guaranteed as to interest by the Philippine Government.

(3) United States Government bonds. and if necessary a fourth class for other securities could be created. It would then be left to the discretion of the Secretary, as is the case in the United States, to determine when securities other than the first and second classes would be accepted. In this way there would be no injustice in forcing the banks to buy Philippine Government or interest obligations at a time when the prices of such bonds were prohibitive. On the other hand, under normal conditions, a good market would be created for the Philippine bonds and depositaries would use collateral which would yield a materially larger income than United States Government bonds and which as government obligations would represent a stronger security than the railroad bonds accepted at the present time.

The Insular Government now receives 3% interest, which is practically in the nature of a tax upon its deposits. Even if the restriction of the collateral to the advantage of the Philippine securities might necessitate a slight reduction of this rate, this would be fully compensated by the advantages of the plan to the Philippine Government. It may be pointed out that this rate could be lowered substantially and still be larger than the rate received by United States deposits, viz., 1% per annum. There would probably be little difficulty in obtaining an intermediate rate of say 2% on Philippine deposits, owing to the fact that they are of a relatively permanent character, and by placing deposits for definite periods, which would be tacitly understood, although not absolutely agreed to by the Government, the average interest rate should be sustained at a fairly high level without difficulty. In this connection it should be noted that Philippine bonds would yield the banks a higher income than the United States bonds held by depositaries for United States Government funds.

The advantages accruing from this plan would be four-fold:

First: The prices of the Philippine obligations now outstanding would be advanced to their former levels, which would give a distinctly better tone to the credit of the Philippine Government, and when it becomes necessary to issue additional bonds their sale would be assured at a good price. A bill to authorize $5,000,000 additional bonds has already passed the Senate, which makes this a very important matter.

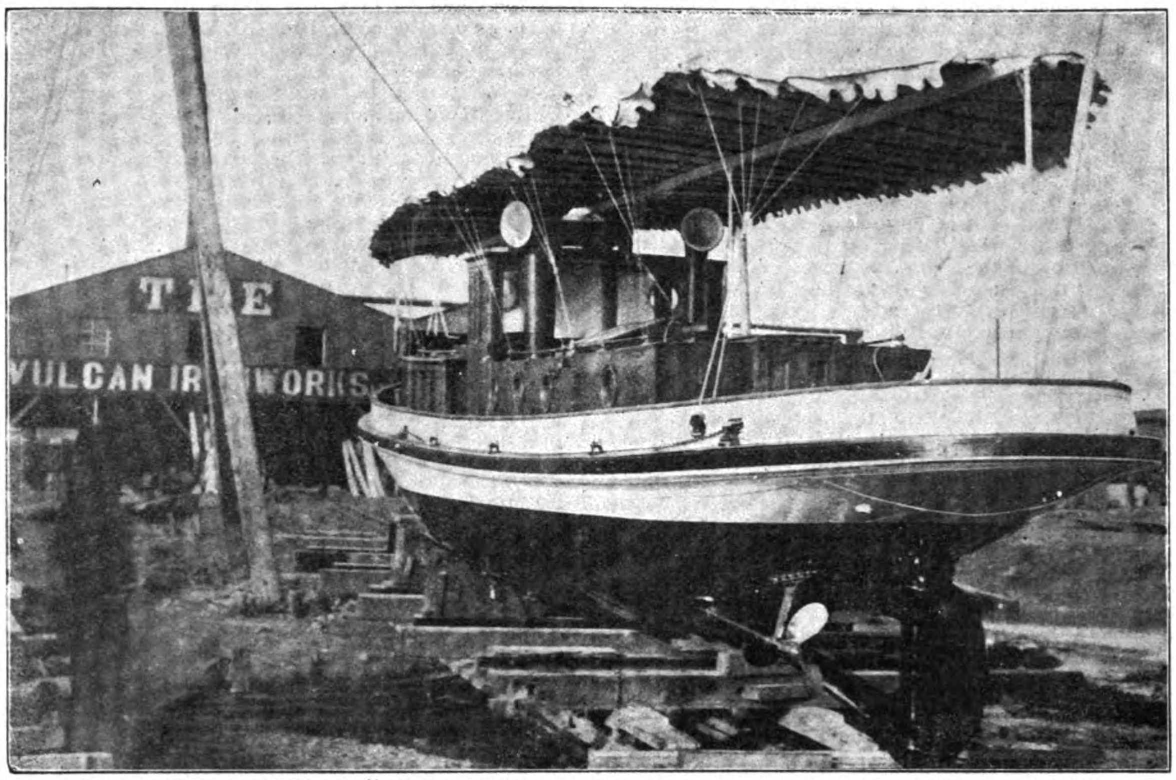
Second: The very favorable sentiment created by a recovery in the prices of Philippine securities would be of pronounced assistance in placing bonds to which the Government may give its guarantee as to interest for the construction of additional railway lines. The Government has been given the right to guarantee the payment of interest on a total of $30,000,000 4% bonds, but at the present time guarantees the interest on only $9,943,000 of bonds. Under the plan proposed this guaranty would insure the successful financing of any enterprises thus favored by the Government.

Third: A market would be created for the securities of Philippine industrial enterprises. It is of utmost importance to the development of the resources of these Islands that it should be possible to obtain American capital for Philippine enterprises. Under the proposed plan the present floating supply of Philippine securities would be permanently cleared out of the market. With the market improved through the removal of these bonds and through the effect of their higher prices it would be possible to finance new Philippine industrial enterprises under the most favorable conditions.

Fourth: There would be a direct advantage to the Philippine Government which has invested funds of the Postal Savings Bank and the Philippine Government's sinking funds in the Philippine Railway Company interest-guaranteed First Mortgage 4% Bonds. These bonds, which were originally purchased at various prices ranging between 96 and the present market, and which are now quoted at about 86 to 88, would unquestionably find their former levels, which would result in a substantial increase in the market value of the Government's investment.

In conclusion, it is apparent that the Philippine Government should employ these most effective means to support its own credit and thereby remove the conditions which at present prove to be an unsurmountable barrier against the investment of American capital in these Islands.

THE TWIN SCREW MOTOR LAUNCH "SUMATRA"



MOTOR LAUNCH "SUMATRA" BUILT BY THE VULCAN IRON WORKS LD. OF SHANGHAI, FOR THE ASIATIC PETROLEUM CO. LD.—DIMENSIONS, LENGTH 66'-0" OVERALL, BREADTH 11'-0", DEPTH 5'-3", DRAUGHT 4'-3".

The twin screw motor launch "Sumatra" built by the Vulcan Ironworks, Ltd., of Shanghai for the Asiatic Petroleum Co., Ltd., is constructed of steel plates and angles of light scantlings suitable for the work, the lines are fine and very easy, the decks are laid with best selected teak. The planks are narrow giving a handsome appearance. The main accommodation of foreign passengers is placed forward and can seat 10 persons comfortably. A small toilet room opening off the saloon affords a convenience rarely found in launches of this size but one appreciated by passengers. Access is gained to the saloon by two entrances, one forward and one aft, this will give a through draught of air in hot weather and is also advantageous in case of accident as it will rarely happen that both doors would be blocked at one time, a state of affairs always possible when there is only one entrance. The saloon is neatly upholstered in rexine and linoleum with the teakwood highly polished.

A wheelhouse is placed amidships with steering gear and a reply telegraph connected with the motor room. The usual gong and jingle has been abandoned as being unsafe with twin engines. Abaft the wheelhouse a room has been provided for Chinese passengers.

The motors which are placed just abaft midships are Gardner motors manufactured by Messrs Norris & Hently, England. They are rated to develop 50 brake horse power each on a very low consumption of kerosine. As they are started with this fuel, no petrol is required, thus eliminating the danger from the presence of that highly inflammable fuel on the vessel with the consequent anxiety to the owners. A further advantage is that as kerosine can be obtained locally all over China there is no probability of the boat being "hung up" miles from home for want of fuel. The lamps for heating the vaporizers are noiseless, being of a special construction.

Accommodation is provided for a Chinese crew of five aft decks at bow and stern in quarters roomy and clear of obstructions.

Taken as a whole the launch has a highly pleasing appearance combining grace and adaptability. The "lines" are specially designed to afford quick maneuvering capabilities, a feature which is highly necessary in the crowded waters of the Whangpoo.

In the yard, among other works under construction is a large pontoon, 225' x 30' x 6'-0", the contract for which was signed on the 20th of December last. The bottom is laid, frames and beams are in place and part of the side plating in position. It is proposed to launch this pontoon this month, and give complete delivery including mooring in place, before China New Year. Two steel pontoons 60' x 15' x 4'-9" were lately constructed and delivered complete in 18 days. These performances speak for themselves and require no comment at our hands.

MOTOR LAUNCH "PONG FEE"

This launch was built for the Asiatic Petroleum Co., Ltd., by a Chinese boat builder to the design of Mr. F. O. Reynolds, Resident Engineer to the Company, for ferry work on the river at Newchwang.

Its dimensions follow: Length, 36'-0"; Beam, 8'-0"; Mld. Dept. 4'-10"; Draft, 3'-10". The "Pong Fee" is constructed of teak and is very strong and substantial throughout. It is engined with one 30 B.H.P. kerosene oil "Kelvin" Motor which gives her a speed of 9½ miles per hour. This launch will run for two hours at full speed on one tin of ordinary kerosene oil. The cost of this launch complete and ready for work was $4000. In the designing of the "Pong Fee" special attention was paid to producing a boat that could go out in rough seas and during cold weather. The high bow forward, which contains the crew's quarters enables the boat to keep dry in a choppy sea such as is experienced in a river where strong tides and winds prevail. The cockpit aft gives open but sheltered accommodation to the passengers. The steersman is also well sheltered in the pilot-house amidships.

BRITISH AND FOREIGN SHIPPING FOR 1910.

A review of the annual report of Lloyd's Register of British and Foreign Shipping for the year ended June 30, 1910, shows new tonnage classed by the society during the year of an aggregate of 929.946 an increase of 64.962 tons over 1908-09 which was the lowest registry of new vessels recorded during the decade. The year 1906-07 was the banner year with 1,484,722 tons to its credit. This evidences renewed activity which may continue until the usual over a million tons annually are resumed.

The year 1909-10 indicated a marked falling off in sailing craft classed the total being 6,243 tons as against 9,265 in the previous year and as against 26,916 tons in 1900-01. The lowest year's register during the decade was 4,066 tons in 1905-06

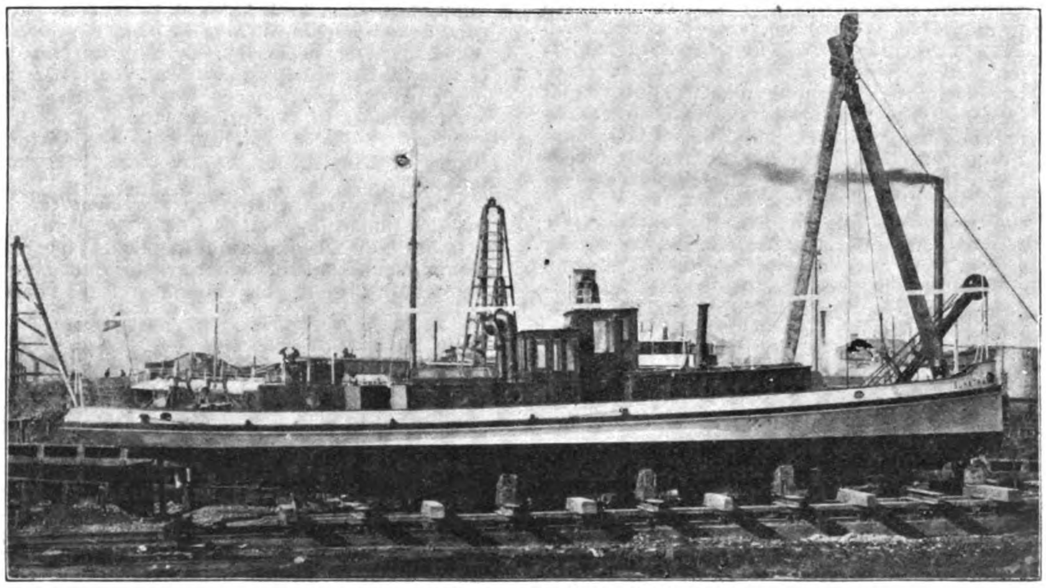
For the year the total number of vessels classed by the society was 540 of which 461 were steamers and 79 sailing ships. Of these 66% were built for the United Kingdom and 34% for the British colonies and foreign countries.

The total number of merchant vessels registered at the close of the year were 10,302 with an aggregate tonnage of 20,500,000. These may be divided into iron and steel and wood and wood and composite as follows:

Iron and steel: Steam—British 6,081, tonnage 12,346,171; Foreign 2.911, tonnage 6,436,-533; total 8,992, tonnage 18,782. Sail—British, 430, tonnage 691,287 Foreign, 702, tonnage, 1,034,547; total, 1,132 tonnage, 1,725,834.

Wood and Composite: Steam and Sail—British, 169, tonnage, 23,704; Foreign, 9, tonnage 3,241; total 178, tonnage, 26,945.

The revised rules which were put in effect July 1, 1909, after careful consideration and investigation into the requirements of the shipping trade have given satisfaction both in the United Kingdom and abroad. The Secretary says:



THE LAUNCH "SUMATRA" ON THE WAYS

"While maintaining the Society's high standard of efficiency, the Rules are adapted to provide for vessels designed to meet all the varied requirements of the world's shipping trade".

Since these new rules were promulgated approval has been given plans for the construction of vessels aggregating nearly 2,000,-000 tons.

A large measure of space is devoted by Secretary Scott to consideration of rules governing internal combustion engines, the use of which is assuming large proportions in other than yachts and small craft. With reference to these engines the following interesting excerpt from the report is of special interest:

One feature of the year was the registration of 34 steamers of upwards of 5,000 tons in the 100 A-1 class of which two were owned by the Union-Castle Mail Steamship Co. Ltd. of 13,361 and 13,326 tons and the Orvieto 12,130, and Otranto, 12,124 tons for the Orient Steam Nav. Co. Ltd. Two vessels, the Franconia and Laconia, of about 19,000 tons each, of the Cunard line are included in this over 10,000 ton class referred to. Of the different types building subject to Lloyd's are an oil steamer for the British Admiralty, a screw steamer for the Canadian government, a dredger each for the Australian and United States Government, the last for the Panama canal works.

Plans submitted for new vessels included 720 of steel, 58 of wood and four composite, in all 782 vessels, an increase of 34% over the previous year. During 1909-10, 759 987 tons of ship and boiler steel were tested by the surveyors of the society, an increase of 282,474 tons over 1908 09.

Statistics show 72 steel manufacturers in the United Kingdom and 164 abroad recognized by the committee for the production of steel and machinery for ship construction.

Reference is especially made in the report to the classification of the vessels plying on the Great Lakes. During the year an investigation was under way under the direction of Mr. Buchanan, Principal Assistant to the Chief Ship Surveyor, and a draft of proposed rules are now under consideration. One vessel 600 feet in length is being constructed under Lloyd's survey for these waters and plans for others have been approved. A Senior Ship Surveyor has been stationed at Cleveland, Ohio.

Including Cleveland there are now 60 Exclusive Surveyors representing the Society in the different ports outside Great Britain.

The testing of chain cables manufactured by annular process is now arranged for under the provisions of the Anchor and Chain Cables Act. In all 304,505 fathoms of chain cables and 6,843 anchors were tested at the Public Proving Houses of Great Britain and in all there are 21 testing machines throughout Europe and 19 in the United States recognized by the society.

Cargo vessels equipped with refrigerating plants holding Lloyd's R. M. C. have increased in number to 128 and 677 surveys were carried out during the year. The proposal for international agreement covering load line regulation received encouragement. Holland and Denmark have adopted British freeboard regulations, and the regulations of Germany, France and Holland are now formally recognized in Great Britain. Other governments have the subject under consideration. Under the provisions of the French shipping law Lloyd's certificates are recognized as exempting vessels from government inspection. The same recognition is accorded the society's certificates in Norway, Sweden, Denmark, Russia and Spain.

The installation of wireless and submarine signal apparatus has been marked during the year, the Society's Register containing reference to 702 vessels equipped with the former and 459 with the latter.

The largest yacht constructed during the year was the steel schooner Westward of 300 tons, the first built under the international rating class in America for racing. During the year eight scholarships granted by the Society were taken up as follows: Three in naval architecture at Glasgow University; three in naval architecture at Armstrong College, Newcastle-on-tyne, and two in marine engineering in connection with the Institute of Marine Engineers.

"The use of Internal Combustion Engines for marine purposes has hitherto been confined to small vessels and yachts, but the possibility of the use of this description of engine as the motive power of large vessels is now becoming a question of immediate and practical importance.

"The Internal Combustion Engines in most general use on land and also those fitted in small vessels are worked upon the 4-stroke cycle principle, and are single-acting, so that with each cylinder there is only one impulse for two revolutions of the shaft. With this type of engine there is considerable difficulty in effecting the reversal of the direction of rotation of the engine, and when these engines are used for marine purposes the astern motion of the screw has usually been obtained by the use of toothed wheel gearing.

"Comparatively recently there has been a development in the Diesel Oil Engine for marine work. A 2-stroke cycle has been successfully adopted, and the reversal is effected in the engine itself, the crank shaft being directly coupled to the screw shaft. The Diesel Oil Engine is now being fitted to three fairly large vessels being built on the Continent under the supervision of the Surveyors to Lloyd's Register. One set is being constructed on the older principle of the 4-stroke cycle with single-acting cylinders, and will be of about 450 I. H. P. Another set is being made on the 2-stroke cycle, also single-acting, and is intended for a twin screw vessel, the power being about 900 I. H. P. on each shaft. The third set is being made on the 2-stroke cycle double-acting system, each cylinder providing two impulses per revolution; this also will be fitted in a twin screw vessel, the total power being about 1800 I. H. P. In each of these cases the engines will be directly coupled to the screw shafts.

"In a set of Internal Combustion Engines, which is being constructed under the Society's survey in this country for a vessel of about 260 tons, there are several novel features. The engines are intended to work with gas produced on board from anthracite coal. The cylinders are of comparatively small size, and the engines are intended to run at a high rate of revolution, and will not be reversible. The connection with the screw shaft will be made by means of a hydrodynamic transformer in which a turbine coupled directly to the screw shaft. The arrangement is such that the screw shaft will rotate at a much less rate of speed than the engines, and provision is also made for reversing its direction of rotation.

"The experience which will be obtained from these four applications of the Internal Combustion Engine is being looked forward to with great interest and will provide data of extreme value.

"During the past year Rules have been adopted by the Society for the Survey of Internal Combustion Engines using petrol or paraffin fuel; and whilst the Committee realize that they must look forward to modifications and developments in these Rules as experience shows to be necessary; it is gratifying to know that the Rules have been received with general approval as very fairly meeting the requirements of the present time.

"Similar Rules applicable to the various types of Diesel Engines are under consideration."

An important change in the constitution of the governing body of this Society (the "father" of Classification Registries) has just been decided upon, which will be of much interest to the shipping community. The decision in question, which has not yet been carried into effect, is to give direct representation to Shipbuilders and Engineers.

The Society, which, we may remind our readers, was established on its present basis so long ago as 1834, has up to the present been under the control of a Committee composed of Shipowners, Underwriters, and Merchants elected by public bodies in London and the other great shipping ports of the United Kingdom. In those earliest days of the survey and classification of shipping, it was thought with some reason that a Committee so composed was fully representative of all the interests concerned. The rapid growth of great shipbuilding yards and engineering works, forming as they have done what are practically universities of naval architecture and marine engineering, introduced, however, a new factor in the world of shipping, and the Committee felt that the usefulness of the Society would be greatly enhanced if the scientific knowledge and practical experience which had contributed so largely to the building up of these enterprises could be enlisted in its service. Accordingly, in 1890, a Consultative Committee was formed, elected by the principal British technical institutions, of gentlemen whose ability and attainments entitle them to be ranked among the foremost authorities on everything pertaining to the technical side of the Society's work.

Mr. Devitt, the Chairman of Lloyd's Register, in his speech at a recent meeting, referred to the valuable work which the Technical Committee, thus brought into existence, had done for the Society. Since its formation, it had considered and reported upon every proposal for the various amendments which had been made in the Society's Rules, and not one of these alterations had been carried into effect without first receiving its approval. He wished to express on behalf of the General Committee their appreciation of the high value of the services rendered in this way by the Members of the Technical Committee, particularly in the consideration of the Society's new Rules which were published in July, 1909, and embodied the results of the most advanced theory and practice in shipbuilding and marine engineering. The general approval accorded to these Rules was sufficiently evidenced by the fact that since their introduction the plans of over a thousand vessels, amounting to 2½ million tons of shipping, had been submitted and passed with a view to the classification of the vessels in Lloyd's Register. The Committee had recently given their earnest consideration to the question of a more direct representation of the shipbuilding and engineering interests, and he was pleased to say that a definite conclusion on the subject would be shortly arrived at.

The decision thus foreshadowed by Mr. Devitt was come to at a Meeting of the Committee on the 15th instant.

The world-wide operations of Lloyd's Register, which has placed the hall-mark of its classification on nearly 21 million tons of the shipping now in existence, of which over 7½ million tons represent foreign ships, render it of the highest importance that the governing body of the Society should be representative of every interest and of the latest progress in the mercantile marine world. It is therefore matter for congratulation that it has, in this decision to broaden its base, furnished fresh evidence of the large and catholic policy which has enabled it to render in the past such valuable services to the shipping community.

President Godfrey's Address Before the Shanghai Society of Engineers and Architects

"I think it is certain that the change will come sooner or later—I mean that the British and American Governments will be compelled to legislate for revision of their systems of Measures and Weights, and fall in line with other nations.

"In a cosmopolitan community like ours in Shanghai, with a population of seventeen of nationalities other than Chinese, it should not be so difficult to introduce the change, particularly as the greater number of them already work on the Metric System. It is not really a difficult matter to bring oneself to think and work in metrics concurrently with our own ponderous systems of measures and weights, and once one gets into the Metric System, he will be only too glad to forget all about the others.

"The question of currency and coinage is perhaps somewhat outside our province, although standards of measure and weight have considerable bearing thereon."

With the above striking paragraphs, Chas. Henry Godfrey, Assoc. M. Inst. C. E., Municipal Engineer and Surveyor of Shanghai, concluded an able address before the Shanghai Society of Engineers and Architects in November, when Mr. Godfrey was elected president of the society. They closed an intelligent discussion of the desirability of adopting the metric system of weights and measures in Shanghai, in which he pointed out the advantages of the decimal system and the necessity of proceeding slowly and intelligently. In this regard he said:

"Changes such as I refer to cannot be brought about in a day nor a year; they must be brought about in the first place by a gradual, very gradual, means working up to time when with the least possible inconvenience the final step may be taken." Seeking a simile to more effectually demonstrate his point, Mr. Godfrey quoted from the memorandum of Chief Engineer Cole, of the Mutual Telephone Co., covering the transfer of the local exchange from one building to another involving service to 4,400 subscribers which necessitated months of preparation and organization to effect with the minimum of inconvenience. For a time all the lines were connected to the two switchboards, the old and the new and when the hour arrived to take up service at the new exchange, the lines were gradually disconnected in the street from the old switchboard and the new connections made permanent. So it should be in superseding the old British and American standards by the more modern and convenient metric scale.

Referring to the growth of sentiment favoring concessions in Great Britain, Mr. Godfrey mentioned that Kynochs of Birmingham was now prepared to execute orders in either British or International Standard Measures. The speaker made reference to the attitude of China towards the ultimate adoption of the metric system and said "We know that reforms in China are not quickly brought about, but it does not follow that on this account, if we are satisfied that the adoption by China of the International standards would be of general benefit, we should not do what we can in securing their adoption".

After giving examples of simple subtraction covering a difference of one inch in lineal and square measure with its cumbersome time consuming process, and comparing them with a similar example using Chinese Land Measure worked on decimal lines, he said:

"Now, bearing these examples in mind, I think we may ask ourselves whether British and Americans here or elsewhere are not lagging behind on at least one point when we should be setting an example to China generally.

"Are we to continue in our old fashioned methods and to try to convince the Chinese that our standards are right, or are we to stand by and see China give us a lead in adopting the standards of other countries? If China is blind to reform it cannot be led by those who are equally or more so, and I leave it a question for future discussion as to whether Great Britain and America should not join hands with the advocates of the Metric System, when the question comes to be taken up, as there is every prospect that it will be in the near future. As a local paper said recently—'It would be a grim piece of humour if China were to wake up and set Great Britain and the United States an example in this regard.' As far as we in Shanghai are concerned I think that a great deal can be done. We don't know what we can do till we try. I can quote at least one great engineering firm, Kynochs in Birmingham, which is prepared to execute orders in either British or International Standard Measures. If this can be done in Birmingham, the workshop of the world—perhaps as conservative a town as may be found in England, at any rate as far as politics are concerned—it can be done in Shanghai where we have people from almost every country under the sun, and with the exception of Great Britain, America and to a certain extent Russia—brought up to deal in decimal and metric units. Lord Kelvin said that he could not get through his laboratory work if he had to deal with British units, and I do not hesitate to say that most of our greatest scientists, if not all, will endorse his views."

He quoted from the resolutions of the Federation of Master Cotton Spinners Association published in the *North China Daily News* to show how the desirability of the decimal system appealed to that body. In effect the resolution provided that in quoting prices all interested in cotton transactions be urged to express all fractions of a penny in hundredths instead of vulgar fractions and that on and after a certain date no contracts were to be expressed in tons, hundredweights and quarters but in 100 lbs. or multiples thereof.

Mr. Godfrey also made a strong appeal to the members for their active interest in providing technical and professional education and especially having reference to engineering and architecture in Shanghai. He reviewed the experience of young men starting on an Eastern career and the lack of facilities to keep from growing rusty after he has added years of apprenticeship to his theoretical training. Of his position with regard to this question, we quote:

"An engineer or an architect must always be a student to keep abreast of the times; it is difficult enough at home but it is infinitely more so in the East. At home, to a certain extent, one may unconsciously be acquiring information on new problems and methods from being brought into every day contact with men who have fresh knowledge to impart, the daily press, the best technical magazines, and the latest works on special subjects can be consulted free. Conditions in the East are very different. We have to make the best of our own company and to take advantage of whatever technical information we can gather from papers to which we subscribe ourselves, or which we can borrow from others. I do not mean to say that, as a rule, we are groping along in serious ignorance of the march of events, but I do say, and I say it emphatically, that there is room for more concerted action in the matter of keeping ourselves up-to date.

"At the present time serious efforts are being put forth to establish two new Universities in the East, one at Hongkong and another at Hankow. In advocating the Hongkong University scheme Sir Frederick Lugard said that it will be kept free from the baneful influence of Chinese officialdom, and the University curriculum will be carried on in the English language. On the other hand, Lord William Cecil's scheme for the establishment of a University for Central China provides that the Chinese (mandarin) language is to be adopted. The main difference is that one university will be a secular one and the other unsecular. This, however, has nothing to do with my address this evening. I only wish to refer to the technical—the engineering and architectural side of the question. Assuming that both these Universities will become accomplished facts in a very short time—as we must all hope they will—we in Shanghai will have to see to it that the magnetising influence of two such institutions does not jeopardise our position here.

"The recent discussion on these two new University schemes in the East leads one to suggest that Shanghai, situated as it is at about even distances from either, and moreover at the very gate of the Chinese Empire, would not be the natural site for a technical school, physical laboratory and technical library. I make the suggestion for what it may be considered to be worth, but I think it is one which might be taken up by some of the engineering companies and firms in Shanghai."

Mr. Godfrey's presidential address marked the conclusion of the tenth milestone of the society which had developed from an initial membership of 40 in 1901 to 143 in 1910. In assuming the chair for the evening President Godfrey reviewed the history of the Society and pointed out that its success was due to the interest taken by its members in the contribution and discussion of papers of very high merit and he hoped that this interest would continue. Throughout his address, great interest was taken by the members and general appreciation of the importance of the subjects dealt with, was manifest.

The Present Status of Mining in the Philippines

By Russel Y. Hanlon*, E.M.C.E.

So far, in the development of the dredging industry in the Philippine Islands, only two districts have been exploited to any extent, namely: the Paracale District on the South-East coast of the island of Luzon, and the Nueva Ecija about 80 miles North and to the East of Manila.

In the Paracale District dredging has been carried on in a desultory fashion for the past four years, first with a New Zealand dredge of doubtful age and antiquated design, and later with two New Zealand and one Risdon dredge. The first dredge from New Zealand was renewed within the past year.

The returns from these machines to date have not been satisfactory mainly due to the fact that the machines were not designed to handle ground of the character upon which they have been working, but also to the fact that more attention has been paid to the purely mechanical part of dredging than to the metallurgic problems envolved.

At present only one of these dredges is using mercury in the sluices and this improvement was instituted but very recently. Another dredge is using one large sluice directly from the bucket hopper and relies solely upon the water flowing through the sluice to break up the clay in the deposit and to save the values. As a result, the clay carries off practically all the fine gold and an unwarranted percentage of the remainder. The actual extraction upon this dredge probably does not exceed 50%. Upon the dredge operating at the mouth of the Paracale River, a very fair system of sluices is in vogue, but this ground has an overburden of from 20 to 30 feet of sticky loam and vegetable decomposition. With a headline dredge it is practically impossible to avoid mixing this super-soil with the bottom pay gravel, consequently, a large proportion of the salvable gold is carried into the tailings.

All of these dredges are equipped with loose connected or link bucket lines which detracts at least 30% from their digging capacity and possess no advantage in ground of the character found in that district. The Paracale District should have large capacity, 7½ or 8½ cubic foot dredges, equipped with spuds in order that the top strata might be run through independent of the lower gold bearing gravels. Further more, the various interests at present engaged, or about to engage, in dredging in the district should consolidate their holdings and operate under one head, thus effecting a large saving in operating cost and a central machine shop and foundry could be erected to cover the entire field of some 1500 acres.

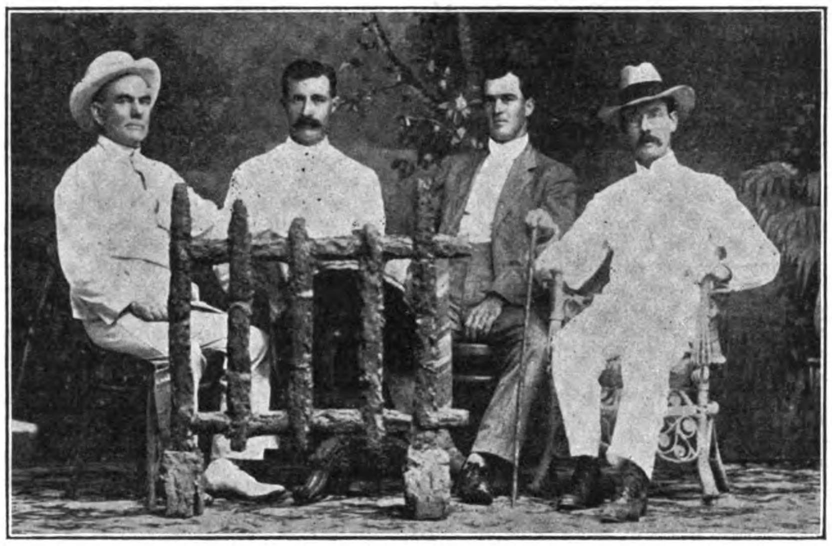
A large portion of the alluvial deposit is covered with a thick growth of manglar timber which far from detracting from the value of the property, I should consider an asset as the wood when dried makes excellent fuel and for this purpose would more than cover the cost of clearing it from the land. The disadvantages of the district are poor transportation facilities, distance from any large base of supplies, and clay or guluto in the top strata. The first two of these could be greatly alleviated by the amalgamation above suggested and the last named may be greatly nullified by designing machinery to fit the ground under consideration. Another and an important phase of the situation in retarding the development of Paracale District has been the near sighted policy of the claim holders in refusing to grant to capital its proper share in the ground. In these days it is difficult to induce capital to invest in dredging propositions in remote places unless a concession of at least 75% of the property is vested in the people furnishing the capital. In only one or two instances has such a concession been made by ground holders in the district.

* Graduate of Yale University, class '01; actively identified with the mining industry since graduation on the Pacific Coast and later with the Oriental Consolidated and other mining interests in Korea.

However, a consolidation scheme is on foot which bids fair to rectify all present and past mistakes and put the district on its proper level as a successful dredging field, as the main factor in dredging, the gold itself, is undoubtedly there in paying quantities.

The Nueva Ecija District is in the formative state at present, but possesses two of the most important characteristics necessary to successful dredging of low grade deposits, i. e., good transportation facilities and excellent hydro-electric sites. Properly exploited and managed ground containing 15 cents gold per cubic yard should yield a good dividend and if the lower gravel afford as good results as the surface indications would lead one to believe, a field of several thousand acres should be developed in a few years' time. Some parts of this district have shown good returns, but as compared to the total alluvial area, the district remains practically a virgin field.

Lurid exploitation and moves bordering upon sharp practice sometimes termed "high finance" have also been responsible to a certain extent in retarding the development of the mining interests in the islands. Certain companies have been formed locally upon claims or groups of claims almost, or entirely, undeveloped and the funds derived from selling such stock have been frittered away in futile, aimless work, often by men who know no more in regard to the nature of the work that they were undertaking than a babe in arms. I have in mind one such company recently formed, the officers and directors in which, presumably acting absolutely in good faith towards the stockholders and the general public, have a man upon the properties, who incidentally is the owner of some of the claims, which are spread over an area of some 200 square miles, supervising the expenditure of the funds, who is no more capable of undertaking such a piece



FROM LEFT TO RIGHT: MR. BAGG, REPRESENTING AUSTRALIAN CAPITAL; MR. BRUCE, OPERATOR PARACALE DREDGE; MR. RUSSEL Y. HANLON, MINING ENGINEER, AND MR. JAMES PEARSON, PROMINENT NEW ZEALAND MINING MAN INTERESTED IN PARACALE.

The gravel is a good clean wash, free from clay or cementing material over a soft, easily dug bedrock and practically free from large boulders.

A New Zealand company has acquired an option upon about 1500 acres and is about to begin systematic prospecting but, to date, this is the only company that has commenced development along consistent lines. If the values are proven to be in the deposit, it will be an ideal district for large dredges of the Fulsom California type operated by electricity, and is capable of being worked at a very low per cubic yard cost.

More or less preliminary prospecting is being done in several parts of the islands, notably on the East coast of Luzon, on Mindoro, and Mindanao, but as yet, very little data is available upon which to base an opinion. There are apparently many streams in the islands containing gold, but it remains to be proven whether they are dredgable or merely small shallow deposits.

All branches of mining in the Philippines are of course handicapped by reason of their distance from the source of capital available for their development, the local supply for this class of work being necessarily comparatively small, but no good property need remain long idle if the owners will meet capital half way and refrain from placing a valuation on their property far in excess of the ore in sight or the profits to be derived from the land. Heretofore, immediately upon the arrival of an engineer representing capital, prices of options, participations, etc., have soared to high heavens and the engineer has returned to his principals thoroughly disgusted, and with his hammer out against the whole archipelago.

of work than I am of operating an aeroplane. Consequently, the funds are being scattered to the four winds instead of being expended in work concentrated upon one or two promising properties.

Apparently, it has never occurred to the majority of promoting and developing companies that the cheapest and wisest course is to employ a competent engineer to report upon their holdings and advise as to the best methods, if any, to be employed in developing the claims and in directing the disbursements.

There is undoubtedly a future for mining here. The present stagnation and the failures of the past have been due principally to one or all of the causes enumerated above but several companies are, and have been operating upon correct lines, and these certainly deserve credit. Others are gradually falling in line, and the next year or two should find several of them paying substantial dividends. The experience and precedents of the past few years of building mills upon a mere prospect and dredges upon untested ground, have proven so costly that few are likely to tempt Providence to such an extent in the future. Fancy exploitation will die a natural death as soon as people learn that there are reputable businesslike companies operating in which they may invest their money.

Many are sceptical in regard to the political situation in the archipelago, but from what I can gather from reputable sources there is not the remotest possibility of any change for decades and every dollar of outside capital invested strengthens the present status.

REVIEWS.

The International Relations of the Chinese Empire, by Hosea Ballou Morse, issued by Messrs. Kelly and Walsh, Limited, has reached our desk. This volume may be said to be the most complete review of Chinese international relations during the period intervening between 1834 and 1856, generally overlooked by casual writers who have been inclined to devote space to the more striking events. Uncovering his motive for the exhaustive work, the author explains:

"Writers of all classes have been impelled to make much of salient and picturesque events, such as the imprisonment of the foreign merchants and the seizure of the opium in 1839, and the episode of the lorcha Arrow in 1856, and to make but passing reference to humdrum events of the intervening years."

The author's special purpose therefore is to cover all the events of importance during this period in a comprehensive manner, and this he has done in twenty-six chapters with citations from official records, and with appendices covering negotiations and correspondence, etc., between the representatives of foreign powers and the Chinese Government. Maps and illustrations are included. This volume will be welcomed by every student of Chinese history.

Practical Stamp Mining and Amalgamation, by H. W. MacFarren, has been issued from the press of the Mining and Scientific Press, San Francisco, and the Mining Magazine, London, and the purpose of the writer is to present the result of his own practical experiences, together with that of other millmen and metallurgists in a wide field of activity. The volume comprises ten chapters of most valuable information to the practical mining man and should receive a warm welcome among those active in the industry. Price $2.00. Postpaid.

Testing for Metallurgical Purposes, by James A. Barr, from the presses of the Mining and Scientific Press, San Francisco, and the Mining Magazine, London, is a compilation of notes on experiments made in the laboratories of the Michigan University, and covers a wide field of experience in this line of work. It will be found of practical value not only to the student but to the mining engineer. Price $2.00. Postpaid.

THE TAAL DISASTER

(Continued from page 313)

G and H of Centeno's description have been largely obliterated by erosion. The active cone which was described as being about 15 meters high, quite perfect and the point of most activity, giving off great masses of water and vapor, is now broken down, but there are some vents in the remnants of its walls. The inactive small cone F of his description has disappeared.

In 1904 Taal was reported to be in eruption and many people visited it then and photographed it. Dean C. Worcester, Secretary of the Interior, has some good negatives taken during this active period and they furnish a better idea than descriptions of what took place during July, which, stated briefly, was as follows.

"Besides giving off a greater amount of steam and sulphurous vapors at all points where such actions had usually occurred, the new crater formed in 1904 sent up great columns of vapor and intermittently ejected mud and stones to a height of at least 150 meters. The activity of this crater soon diminished and in December, 1905, its floor was covered by a boiling lake. In March, 1907, the lake had disappeared. The crater now contains some hot mud spots which are in a state of very moderate agitation and give off but little steam and gas. The temporary red lake in the southeastern part of the main crater floor seems to have first been mentioned during the eruption of 1904.*

"*Historic eruptions of Taal.*—The following summary of the historic eruptions of Taal is taken from Centeno's monograph published in 1882. At the time of the Spanish conquest, according to various ancient documents, the place of activity of Taal (or perhaps better, a place of activity) was on the northwestern point of the island in a small cone, Bininting Malaqui. There are no records of eruption from it, but in 1880, when it was visited by Centeno there were some small vents of vapor and gas in its crater and one on the southeast border of its rim. There are now some similar phenomena at this cone, but of diminished importance.

"In 1680 Taal is described as having occasional eruptions which destroyed many fields on the island. At that time there were two vents, one of sulphur and the other of green water. They are interpreted as being the yellow and green lakes which exist to-day.

"In 1709-1715 eruptions produced some damage on the island.

"In 1716 there was an eruption accompanied by earthquakes, and a disturbance in Taal Lake between the island and Mount Macalod. The waters of the lake were so agitated that waves cut away the outer shore of the lake, injuring the *convento* at Taal which was then situated on its border. There are some sunken rocks in the lake between the volcano and Mount Macalod, but whether or not they originated at the time of this eruption is not known.

"In 1731 there was an eruption in Taal Lake east of the island, forming a new island the larger part of which subsided, leaving remnants which are known as Bubuing and Napayong Islands.

"In 1749 a violet eruption began on August 6 and continued about three weeks. Some settlements near the shores of the lake suffered damage from the seismic disturbances and falling ashes. There were no flows of lava, but incandescent stones were thrown out. Eruptions took place in the lake to the north and east of the island.

"In 1754 the greatest historical eruption took place, lasting from May until December. The towns of Sala, Lipa, Tananan and Taal, then on the border of the lake, were destroyed, and Balayan, Bauan, Batangas. Rosario, Santo Tomas and San Pablo suffered great disasters. The rain of scoria and ashes extended over a much larger area. The surface of the lake was covered with patches of floating pumice and ashes. Incandescent stones were thrown out and fell into the lake. There were, however, no lava flows. Heavy rains descended and the barrio of Balili near Sala was covered with a shower of mud.

"In 1808 there were eruptions of slight intensity which began in February and continued until the end of April, but no damage was done to the inhabitants who, after the disaster of 1749, had returned to settle on the margin of the lake.

"The eruption of 1904 which has already been described was unimportant. It is the first one of which photographs have been published."

* In the article by R. F. Bacon, *Philippine Journal of Science, Sec. A.* (1907) 2, 115, on the "Crater Lakes of Taal Volcano," the yellow lake of Centeno's description is called the boiling crater lake. A temporary lake southeast of the yellow lake is referred to as the yellow lake. Evidently the colors of the lakes vary from time to time.

CONTRACTING NEWS

CONTRACTS AWARDED.—Municipality of Shanghai.—Oil supply 1911.—The following tenders were accepted:

Asiatic Petroleum Co., Ld.	
Liquid fuel	at Tl. 0.08¼ per gal.
Petrol	" 0.50* "
Heavy Petroleum	" 0.11 "
Lubricating-Oil for steam rollers	" 0.55 "
Carlowitz & Co., agents, Lubricating Oil Import Co., Ld.	
Lubricating Oil, light machines	at Tl. 0.32 per gal.
Lubricating Oil, motor cars A	" 1.05 "
Lubricating Oil, motor cars B	" 1.20 "
Heavy mineral axle grease	" 0 4½ per lb.
R. M. Noblston.	
Cylinder oil for quarry engines	at Tl. 0.68 per gal.
Crusher oil for quarry engines	" 0 68 "
Vacuum Oil Company.	
Leather oil for harness	at Tl. 0.72 per gal.
Axle grease for stone crushers	" 0.07½ per lb.
Lubricating compound for motor cars	" 0.14† "
Standard Oil Company of New York.	
Kerosene oil "Devoe's Brilliant"	at Tls. 2.10 per case
Bulk oil	at Tls. 1 50 per 10 gal.

* less $0.025 per gallon rebate and $0.75 refund on 10 gallon drums.

†less 10 per cent discount.

BIDS OPENED–MUNICIPALITY OF MANILA.—Construction Sewer System Luneta Extension. The following bids were opened:

The Manila Construction Company, ₱53.000; Delmar Smith Clinton, ₱59,000; The Atlantic Gulf and Pacific Company, ₱57,000. The work to be completed within six months.

PROPOSALS INVITED

MUNICIPALITY OF SHANGHAI—(a) 21 MILES VULCANIZED COPPER CABLE, (b) 30 MILES BARE COPPER CABLE.—Specifications available at office of the Electrical Engineer Electricity Works, Shanghai.—Tenders must be submitted by noon, March 9, 1911.

DEPARTMENT OF FINANCE, BANGKOK, SIAM.—For purchase of 360 tons of demonetized bronze coins of Siam chiefly atts and two-att pieces, 85 grains and 173 grains respectively. Also comprises proportion of half-att and four att pieces. All coins approximately 95% copper, 4% tin and 1% zinc. Proposal must be expressed in pounds sterling and guarantee that coins must be defaced, cut, chipped or melted by successful bidder. Bids must be addressed Minister of Finance, Bangkok, and marked "Tenders for purchase of old bronze coins" and submitted on or before April 18, 1911.

Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., April 10, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

35,000 pairs of cotton socks.

Blank proposals may be obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

PROPOSALS FOR FROZEN FRESH BEEF AND MUTTON.—Headquarters Philippines Division Office Chief Commissary, Manila, P. I. December 31, 1910.—Sealed proposals, in triplicate, subject to usual conditions, will be received at this office until 11 o'clock a. m. April 5, 1911, at which time and place they will be opened in the presence of attending bidders, for furnishing and delivering about six million six hundred thousand (6.600.000) pounds of frozen fresh beef and two hundred thousand (200,000) pounds of frozen fresh mutton to the Subsistence Department, U. S. Army, at Manila, P. I., during year ending June 30, 1912. The contractor will be required to pay all customs duties. The United States reserves the right to decrease the amount advertised for, upon reasonable notice to the contractor, or to increase the amount with his consent. Each proposal must be accompanied with a bidder's guaranty in the amount of $20,000 or with certified check for that sum on a bank of approved standing in Manila. The bidder to whom the contract is awarded will be required to give bond. Blanks and full information furnished on application to this office or to nearest United States Consul. Envelopes containing proposals must be marked: "Proposals for frozen fresh beef and mutton for fiscal year 1912, to be opened April 5, 1911," and addressed to the undersigned.—D. L. BRAINARD. Lieut. Col., D. C. G., U. S. Army, Chief Commissary.

BUREAU OF CONSTABULARY.—Office of the Chief Supply Officer. Sealed proposals in triplicate, subject to the usual conditions will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a.m., May 15, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

2,000 woolen blankets.

Blank proposals and information as to size and weight of blanket may be obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

PROPOSALS FOR MINERAL OIL.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., February 10, 1911. Sealed proposals, in triplicate, subject to the usual conditions, for furnishing 365,000 gallons Mineral Oil to the Quartermaster's Department, U. S. Army, during the fiscal year commencing July 1st, 1911, and ending June 30th, 1912, will be received here until 11:00 a. m. March 10th, 1911, and then publicly opened. Information and blank forms furnished upon application. F. G. Hodgson, Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

PROPOSALS FOR COAL.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., January 7, 1911. Sealed proposals, in triplicate, subject to the usual conditions, for furnishing approximately 65,000 tons of coal to the Quartermaster's Department, U. S. Army, during the Fiscal Year 1912, will be received here until 11:00 A, M. May 8, 1911, and then opened. Information and blank forms furnished upon application. F. G. HODGSON, Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

PHILIPPINE MINING NEWS

PROPOSED AMENDMENTS TO PHILIPPINE MINING LAW.—General Edwards, Chief of the Bureau of Insular Affairs, in his report to the Secretary of War, makes the following recommendation:

"The organic act of July 1, 1902, provides, " 'That no holder shall be entitled to hold in his, its, or their own name or in the name of any other person, corporation, or association more than one mineral claim on the same vein or lode.'

"The Philippine Commission has repeatedly recommended amendment of this provision, and several bills for this purpose, approved by the Secretary of War, have been introduced at various times in Congress without reaching final action.

FAR EASTERN RAILWAYS

BURMA RAILWAY SUPPLIES.—Two lathes supplied by Messrs. John Lang & Sons, Ltd., a combined welding and folding machine by the J. C. Nicholson Tool Co., Ltd., and a screen shaker by the Pneumatic Engineering Appliance Co., Ltd., have been installed by the Burma Railway Co. in their shops.

WINCHOW RAILWAY ENTERPRISE.—The construction of a railway from Fung Tauen on West River, approximately fifteen miles west of Wuchow, to Sai Waan has finally been arranged. The line will be constructed by the company operating rich coal mines at Sai Waan in the Hoh Uen District.

INDIAN RAILWAY CONSTRUCTION.—The Bengal Chamber of Commerce has addressed the government on the subject of maintaining the annual capital expenditure so that it will not fall below an aggregate of £10,000,000 and if possible increase it to £12,500,000 in conformity with the conclusions of the Indian Railway Finance Committee that convened in London in 1907-08. The Chamber points to the fact that last year the amount expended fell below £10,000,000 and much greatly needed construction was delayed. Reference is also made to the prosperous condition of lines operating and the necessity of maintaining the lines so as to keep pace with the increased demands made upon them.

AMERICAN LOCOMOTIVES FOR JAPAN.—The Railway Board has placed an order with the American Locomotive Co., through the Mitsui Bussan Kaisha, for 24 Pacific engines and 6 Mallet of 0-4-0 C type locomotives. The Pacific locomotives will have 18 5" by 24" cylinders with driving wheels of 63" diameter and total working weight of 133,000 pounds. The Mallet cylinders will be 15 5" and 24 5" by 24" with 63" drivers and a total working weight of 122,000 pounds.

FRENCH RAILWAY ACTIVITY.—Peking advices are to the effect that prominent French merchants have urged their government to promote the construction of an extension of the French line to Yunnan to connect with Szechuan for the purpose of tapping the Yangtze region, together with a line from Lungchow via Nanning to Wuchow to secure the traffic along the West River. It is also proposed that the construction of Yunnan Kueichon line should be built either by French or Chinese capital.

This activity is due to a desire to develop French interests and at the same time encourage traffic for the Yunnan Railway. Then there are the projects connecting Siam with Saigon which will connect with the Peninsular Railway. What measure of success will mark these extensive programs is difficult at present to determine.

THE FUKIEN RAILWAY.—This company which operates over twelve miles of its line connecting Sing Su and Shih Bee on the mainland and serving Amoy by means of a ferry have been giving a service of three trains daily each way since January 1.

JOHORE STATE RAILWAY.—The estimates of revenue for 1911 amount to $220,000 (Str. Cur.) compared with $159,444 for 1910 and $90,285 for 1909. The estimated expenditure for 1911 will reach $432,482 including $101,171 under the head of personal emoluments, other charges $330,088, and $45,730 for capital account. The officials anticipate an increase of 50% in traffic revenue this year and expect in a few years to put in on a paying basis.

SOUTH MANCHURIA RAILWAY LOAN.—This loan drawing 4.5% for £6,000,000 was successfully floated in London last month. The issue price was 98 and the bonds are redeemable in 25 years. Subscriptions were received by the Yokohama Specie Bank, the Hongkong & Shanghai Banking Corporation. It will be remembered that the company was organized with a capital of 200,000,000 yen, half of which represented the value of the railway as estimated by the Japanese Government and 20,000,000 yen was paid up and power to issue 80,000,000 in bonds conferred. This issue was made successfully, but an additional issue was considered necessary to provide for extensions and construction to keep pace with increased traffic not originally contemplated. The loan for 60,000,000 yen was authorized last year and we learn that of the proceeds 20,000,000 yen will be used to retire debentures and the 40,000,000 yen in doubling the line from Dairen to Sukiatun, in completing the Antung-Mukden reconstruction, in further developing the Tuchun mines and in completing the Dairen harbor improvement program.

THE TOKYO RAILWAY CO.—The following is the statement of the directors approved at the recent half yearly meeting:

	yen.
Net profits for the term	1,731,405
Balance brought over from previous term	23,324
Total	1,754,529
To reserve	86,570
To special reserve	88,430
Bonus to officials	35,000
Dividend to shareholders (7% per annum)	1,522,500
Balance carried forward	22,229

"During the last session a bill intended to accomplish this object was introduced in the Senate almost identical with a bill introduced during the Fifty-ninth Congress. It provides that the government of the Philippine Islands may make regulations, not in conflict with the provisions of the act of July 1, 1902, as amended, governing the number of mining claims that any person, corporation, or association may locate on the same vein or lode. It also provides, under similar regulations, for granting licenses for exploration and mining for gold and other minerals in the waters of the Philippine Islands, no exclusive licenses to be granted except as to limited or prescribed areas."

"There are a number of minerals in the Philippine Islands, some of which have been found in paying quantities. There has been much prospecting, but mining is largely a speculative matter, and, as the minerals there are found mainly in the wildest and most inaccessible parts, with no railroads or highways or means of communication with the outer world, development has been discouraged rather than encouraged by the inducements offered.

"It is recommended that these amendments be enacted into law. It is believed that they will be of material benefit to the islands in the present, while properly safeguarding future interests."

BAGUIO DISTRICT.—The work of installation on the Headwaters continues and the success of this enterprise will measure the future investment of foreign capital in the development of that region. So far as can be learned, there is no reason to doubt the extent of the deposits, making a paying low grade proposition under experienced direction and economical administration. The Major Mines are in the same class as the Headwaters with respect to future promise and it will rest with those directly in charge of operations, whether these enterprises prove successful or not. In another column, Mr. Hanlon puts his finger on the weak spot in Philippine mining activity. In developing a prospect into a mine, the amount of money spent in securing qualified expert advice, is well invested in that it eliminates false estimates and failures due to inexperienced direction and haphazard pronouncements. Mine owners in the islands have ignored this great truth. The Philippines have suffered greatly from those who have posed as authorities on mines and mining and it is in such properties as the Headquarters, the Major Mines, the Bua Company and the Benguet Consolidated in Benguet and the Colorado Mining Company in Masbate, with proper direction that the mining men of the archipelago must look for confirmation of their faith in the future of the industry.

In all the reliable reports available on mineral deposits in the islands, there is not one that does not confirm the claim that rich values are to be found, and it is regrettable that with but the few instances referred to, the failures and disappointments have been due to most deplorable administration.

Consolidation in Benguet which must be rated generally as a low grade proposition, will solve the problem of administration. This will surely come, once there is realized substantial and permanent returns in the form of dividends, from any of these properties.

THE PARACALE DISTRICT.—We understand that the proposal to develop the Paracale Extension has fallen through for the present. The tests recently made were satisfactory and while the report of the expert did not read like a circus poster, or a wild cat prospectus, it demonstrated that with proper equipment suited to conditions, from ten to twenty per cent could be realized on capital invested with economic administration. The values exceeded thirty cents gold as a fair average, although some tests were much higher and wide margin of safety allowed. We have not learned the exact reason for postponing this development, but a desire among a few interested to cover capitalize is believed to be the nigger that refuses to leave the woodpile.

NUEVA ECIJA DISTRICT.—Testing continues on the Rio Chico property and a lease is being negotiated by Australian capital covering 640 acres of placer on the Marinat River which has yet to be proved up. This district is easily available by railway and water transportation and if the values are found satisfactory will prove a desirable field for dredging.

MINDANAO PLACERS.—In Iligan and Cagayan de Misamis there is some activity and we understand that Australian capital is interested in the development of several claims on the Manalgue River in Iligan. On the Eponan in Cagayan de Misamis development work is reported progressing favorably.

BAHAY VALLEY OIL CO.—At the regular annual meeting of this company which is interested in the Tayabas Oil Fields the following directors were chosen:

M. F. Loewenstein, Mauro Prieto, E. E. White, E. B. Bruce, L. E. Holden and R. C. Hosty.

THE GUAMAS GROUP.—After all the splurge about the new dredge being ordered in the United States for this rich property, we have been informed that the option given the exploration company has been forfeited.

THE UMARAI RIVER PLACER MINING SYNDICATE.—The first placer mining enterprise to enter the field on the East Coast of Luzon, lying along Dangalang Bay, has taken up claims on the Umarai River owned by an association the members of which are R. W. Squires, C. D. Squires, W. S. Boston, H Hardman, L. E. Perske and Theodoro Gubayedoff. The company is capitalized for £150,000 subscribed by European and British capital with headquarters at Sydney, Australia. It is understood that a dredge will be installed by the end of the year. The tests reported cover ten claims and represent paying values.

ENGINEERING, CONSTRUCTION, FINANCIAL, AND COMMERCIAL NEWS

MUKDEN-ANTUNG CONSTRUCTION.—The railhead on the standard gauge is advancing rapidly from the Mukden end and was expected to reach Penchihu, January 15. Tunnel work at Black Mine Pass has progressed to a point where the light line was transferred so as to run through it, January 1, thus saving three miles.

SHANGHAI-NANKING RAILWAY SHOPS.—The contract for the construction of sixteen passenger cars for the Tientsin-Pukow lines has been secured by this company. The order covers three first class, six second class, and ten third class.

TIENTSIN-PUKOW RAILWAY (Southern Section).—With little ostentation, the completion of temporary construction was announced January 20 and second and third class passenger traffic over the line to Linhanikuan, a distance of 100 miles, was begun. Trains are also running from the North end of the section from Tsinanfu to Taianfu. The railhead from the south is being pushed forward beyond Hsuchoufo.

SUPPLY OF INDIAN RAILWAY MATERIAL.—According to *Railway and Shipping*, the Motherwell Bridge Company, Limited, North Britain, has an order from the South Indian Railway Company for the supply of bridge mateials and bracing frames and the Workington Steel and Iron Company, Limited, for the supply of a large quantity of steel rails and steel fishplates. The Birmingham Railway Carriage and Wagon Company, Limited, have a large order from the South Indian Railway Company for the supply of spare buffer parts for rolling-stock and the Consolidated Brake and Engineering Company, Limited, Spencer House, London, E. C., for the supply of brake gear. Messrs. John Spencer and Sons, Limited, Newburn Steel Works, Newcastle-on-Tyne, had a large order from the same railway for the supply of laminated bearing springs and Messrs. G. Salter and Company, Limited, for the supply of helical and volute springs for rolling stock. Messrs. Jessop and Company, Calcutta, have got the order of the North-Western State Railway for the supply of the iron and steel work which is required for the construction of the erecting shop in the new Locomotive Workshops at Lahore. Messrs. Alfred Herbert, Limited, Coventry, England, have an order from the Bengal-Nagpur Railway for the supply of a workshop sensitive radial drill and Messrs. Joshua Buckton and Company, Limited, Leeds, have a contract for the supply of a hydraulic wheel press. The Vacuum Brake Company, Limited, London, have an order from the East Indian Railway Company for the supply of five hundred sets of vacuum brake fittings and rigging, delivery to be completed by next month.

HUNAN RAILWAY CONSTRUCTION.—The section between Changsa and Chuchow is reported completed and passenger traffic will be inaugurated at an early date.

F. M. S. RAILWAY CHANGES.—The *Perak Pioneer* announces that the Division in charge of the Divisional Engineer North, F. M. S. Railway, has been extended from Tanjong Malin to Central Workshops including Batu Caves Branch Line, with effect from 1st January, 1911. This gives Mr. Frank Mills an additional mileage of about 57 miles. His two assistants, the District Railway Engineers, who are stationed at Taiping and Ipoh, Messrs. Johnson and Stephenson respectively, have also had their districts extended.

The Division of Mr. D. J. Highet, the Engineer in charge of the Southern Division, has also been considerably increased. The Government has not overlooked the fact that their work and responsibility have thereby been increased, and it has pleased the higher authorities to increase the maximum salary of their appointments by £120 per annum.

RAILWAYS CONTROLLED BY JAPAN.—Including lines in Formosa, Chosen, Manchuria the entire mileage is estimated at 7,000 miles approximately. In Chosen with the completion of the Seoul Wonsan and Honam lines the total expenditure there will reach 130,000,000 yen and it is the purpose to expend a similar amount before the plans proposed are completed. This will be represented by about 1200 miles of line. The reconstruction of the Seoul-Wiju line is expected comp'eted in December this year and the bridge over the Yalu in March 1912.

SIAMESE PALACE ILLUMINATION.—The new royal palace at Petchaburi is to be equipped with an electric light plant for illuminating the building and grounds. The contract which was let to Messrs. Howard Erskine, Ltd., is well under way.

KYUSHU HYDRO-ELECTRIC CO.—A new project is under way to utilize the waters of the Chikingo and the Yamakunig in the development of 140,000 h. p. for generating purposes and it is proposed to compete generally with the electric power plants, in Kyushu of which there are at present fifteen. The capital of the company is 8,000,000 yen. The cost of 1 h. p. has been estimated at 237 yen and the company proposes furnishing 10 c. p. lights at 50 sen per mo. as against 1.50 yen by the old companies.

BRITISH ALL RED WIRELESS.—The following estimates are made available by Consul General James T. Dr. Bois of Singapore:

"The wireless stations necessary to connect the British possessions are only 20 in all. They would cost $5,000,000 to build and about $1,000,000 annually to operate.

"Stations would be required at Montreal, Glace Bay, and Vancouver, Canada; Hongkong; Singapore; Perth, Adelaide, and Sydney, Australia; Wellington, New Zealand; Gibraltar; Malta; Alexandria, Egypt; Aden; Bombay; Colombo; Mombasa, Durban, Cape Town, Bathurst, Sierra Leone, and St. Helena, Africa.

"The connections required would be: (1) Montreal, Canada, to Sydney, Australia, as follows: Montreal to Gace Bay, thence to Vancouver, Hongkong, Singapore, Perth, Adelaide, and Sydney. (2) England to Wellington, as follows: England to Gibraltar, thence to Malta, Alexandria, Aden, Bombay, Colombo, Singapore, Perth, Adelaide, Sydney, and Wellington. (3) England to China, by route 2 to Singapore, thence to Hongkong. (4) England to Africa, as follows: England to Gibraltar, thence to Aden, Mombasa, Durban, and Cape Town; or, England to Bathurst, thence to Sierra Leone, St. Helena, and Cape Town."

AVIATION WEEK IN BANGKOK.—The meet- following was postponed until the first week in February.

THE KEI HIN ELECTRIC RAILWAY.—The following is the statement of account and distribution for the half year:

	yen
Net gains	77,806
Balance brought over from previous term	899
Total	78,705
This was distributed as follows:—	
To reserve	3,891
To special reserve	1,945
Bonus to officials	2,923
Dividend to shareholders (4% per annum)	60,700
Balance carried forward	446

SANNING RAILWAY LOAN.—This company has arranged with the Bank of Kwantung for a short loan of 300,000 Tls. at the rate of 9% per annum.

TELEFUNKEN IN THE PHILIPPINES.—Messrs. Germann & Co., local agents for this company, have erected a wirelesss tation on the Luneta for the purpose of giving demonstrations with a view to entering into competition to instal an extensive system in the islands.

KIANGWAN AVIATION MEET.—A meeting was arranged for the first week in February at the International Race Course and special excursion trains from Shanghai were advertised.

HONGKONG AVIATION MEET ABANDONED—The arrangement with J. C. Mars, the American aviator, for a flight at Taipoo was abandoned on account of the indisposition of the government to permit a special excursion over the railway out of which the aviator would secure a percentage. The press expresses great disappointment.

PHILIPPINE AVIATORS EXPERIMENTING.—After many discouragements the local Manila inventors are making substantial headway on their models. Some difficulty has been met in providing adequate power as the machines are of the heavier than air order.

HANKOW ELECTRIC LIGHT CO.—This company is reported to have concluded a loan of Tls. 1,200,000 with Japanese bankers.

BAGUIO HYDRO-ELECTRIC FRANCHISE.—The Philippine legislature has passed an act to provide for the granting of a franchise for the use of the waters of the Agno River in Benguet, for the generation of power for the maintenance of an electric light, heat, and power system and the supply of light, heat, and power in and to the city of Baguio. In lieu of taxes, etc., the successful bidder will be required to pay into the insular treasury a percentage of gross receipts.

BANGKOK LIGHTING.—The *Bangkok Times* announces that the Siam Electricity Co. is arranging to extend its lighting system and instal lights of 100 candle power on the main thoroughfares suspended on the poles of the trolley system. "This is a big improvement in street lighting," says the *Times*, "which has long been a reproach to Siam's capital."

WIRELESS USED BY TAAL RELIEF.—The enterprise of the U. S. Army in the Philippines was demonstrated by the establishment of wireless stations surrounding Lake Taal and connected with Fort McKinley, with field telephones, etc., under direction of the Signal Corps to keep the several U. S. Burial Corps detachments in touch with each other. It worked most effectively.

JAPAN'S TELEPHONE SYSTEM.—Statistics prepared by the *Chamber of Commerce Journal* of Yokohama on the 20th anniversary of the inauguration of the first telephone exchange in Japan show that over 30,000,000 yen represents the outlay of the government to date in this department with the result that 1,600 cities and towns in Japan are connected up with 126,000 subscribers. There are over 440,000 miles of wire. The annual revenue is yen 10,000,000. It is the purpose of the government to expend 18,000,000 yen during the next two years to accommodate 60,000 new applications now on file.

MANILA CARNIVAL ELECTRIC LIGHT TOWER.—There will be 48,000 lights massed on the 120 foot tower installed in the carnival grounds, Manila, besides a flash light service and illuminations covering the entire grounds and Luneta in the foreground.

AVIATION AT THE PHILIPPINE CARNIVAL.—J. C. Mars with a Curtiss biplane has arrived at Manila under contract with the Carnival Association and will make at least one flight daily during the week.

AMERICAN SUPPLIES FOR TASMANIA ELECTRIC RAILWAYS.—U. S. Consul General H. D. Baker reports that construction work on the electric tramways at Launceston, northern Tasmania, has been commenced. The 5½ miles of rails, tie rods, fish bolts, etc., were supplied by an American firm for about $45,000 and were brought to Tasmania by direct steamer. The tram track will mostly be a single line, one with loops. Double lines will, however, be put down in the busiest sections of the city. A British firm secured the contracts for the overhead equipment and the trucks, the cars are to be manufactured by a local firm, and the motorst each of 37 horsepower, will come from a company on the mainland of Australia. In is expected that the first section of the Launceston trams will be running early in 1911.

PUBLIC WORKS, DOCKS, WHARVES, BUILDINGS, ETC.

MANILA PORT WORKS.—The work of connecting the piers with the transport docks comprehensive system of arrastre is progressing.

PEARL HARBOR.—The naval estimates for 1911 include an item of $2,387,000 gold for the development of Pearl Harbor, Hawaii.

NEWCHWANG HARBOR IMPROVEMENT.—The sum of Tls. 517,000 of which Tls. 200,000 will be invested in a dredger have been appropriated for this work. Increased tonnage dues and duty on exports will be levied to reimburse the government. The details of work follow:

(1) Deepening the bar at the mouth of the Liao and otherwise improving the approach to the port, $482,974.

(2) Protecting Duck Island bend, $44,000.

(3) Improving the upper river, dredgers etc, $150,000, running expenses annually $28,000.

OPENING OF THE NEW SHANGHAI CLUB.—The new club rooms were officially opened January 6 by Sir Pelham Warren who laid the corner stone two years previously. The cost amounted approximately Tls. 600,000 and is without exception the most imposing club house in the Far East. It is of English renaissance design and the front is built of artificial stone with Soochow granite columns. The most imposing room is the Grand Hall approached by a broad stairway of Sicilian marble. This hall is 90 feet × 39 with a height to the barrelled glass ceiling of 41.5 feet. The ceiling which caps the arches is supported by ionic columns. The bar on the south side is 110 feet long and 39 feet wide and panelled in oak. This room is 17 75 feet from floor to ceiling. The news room 67.5×30 feet is on the north side and waiting rooms and telephone booths are on either side of the main entrance. A billiard room 75.5×29.5 feet is located at the northwest corner with large open fireplaces. Then there is the Domino Room 36.25×39 feet, the secretary's office behind the bar and the lavatories farther to the rear. The whole of the first floor front 102.25×43.5 feet with 19 foot ceiling makes one of the most splendidly appointed dining rooms in Shanghai. Besides this main dining room there are three others on the same floor for special banquets, etc., and all are connected with the kitchen by electric elevators, telephones, etc. The library opens out of the Grand Hall on the first floor, is surrounded by a gallery, and has a reading-room 23×39 feet opening out of it. Then there is the card room 46×22 feet and 40 bedrooms each provided with a modern bath, etc. The fourth and top floor is set aside for the kitchen and stewart's apartments. In the basement are bowling alleys, barber shop, dressing rooms, cold store rooms, heating apparatus, and wine cellars.

There are 1,000 electric lights and 100 steam radiators installed. The weight of the building is estimated at 17,000 tons and the floor area 10,500 square yards. The following are among the firms who supplied materials or were otherwise interested in the construction of this splendid structure: Messrs. Howarth Erskine, Ltd., general contractors and supplying steel work; U. S. Steel Products Company, reinforcing steel for floors; Green Island Cement, Messrs. Shewan Tomes & Co., Messrs. Samuel McGregor & Co., conolite and malthoid; cold and hot water supply, Shanghai Waterworks Co.; electric light, telephones, signal service by Messrs. Scott Harding & Co ; refrigerating apparatus and electric elevators, electric fittings, Messrs. Anderson, Meyer & Co; Electric fittings, the Shanghai Electric and Asbestos Co.

MANILA PUBLIC WORKS.—During the fiscal year 1910 the city expended ₱738,000 for the maintenance of roads, bridges and parks; for new roads ₱186,800; for new equipment ₱108,000; for public buildings ₱41,270, and for new waterworks and sewerage system ₱1,200,000.

TSURUGA HARBOR WORKS.—The work of improvement of this port has been suspended as a result of the destruction of the 120 yard breakwater by recent storms and the belief of engineers that a harbor at this point is impracticable.

PROJECTED HARBOR WORK IN KOREA.—The budget provides for the construction of custom houses and harbors amounting to 2,026,052 yen. Of this 583,000 yen are for the construction of a custom house and harbor in Chemulpo, 902,000 yen for Fusan, 325,000 yen for Chinnampo, and 62,000 yen for Pyongyang. The construction of the harbor at Chemulpo is a consecutive work for six years commencing next year. The estimates for the work during the six years are as follows:—

	yen.		yen.
1911	....553 oco	1914	650,000
1912	600,000	1915	650,000
1913	600,000	1916	......450.000

The estimates for similar works at Fusan, Chinnampo, and Pongyang are as follows:—

	Fusan. yen.	Chemulpo. yen.	Pyongyang. yen.
1911	 902,500	390,200	62,000
1912	325,050	340,000	66,000
1913	857,000	17,000	—
1914	973,000	—	—

MONGKOKSUI HARBOR OF REFUGE.—According to a statement made by the Colonial Secretary at a recent session of the Hongkong Legislature, the contract price for the performance of this work was $2,018,002.54, Hongkong Cur., and the date of completion is October 26, 1915.

LIENSHAN HARBOR WORKS.—With the purchase of land for streets, work on the new harbor will begin.

SHIPBUILDING, MERCHANT MARINE AND FISHERIES

PACIFIC MAIL STEAMER'S CENTURY.—The S. S. China completed here 100th round trip on the one run upon her arrival in Hongkong, January 3.

JAPANESE BUY FOREIGN STEAMERS.—The Indo-China S. N. Co. has sold the S. S. Amara through Messrs. Jardine, Matheson & Co. to Mr. C. Yamaki of Tokyo for the Formosan trade. The steamer Hingsang of the same company was purchased some time ago. These vessels are each of approximately 2,400 tons.

PENANG TUG LAUNCHED.—The Eastern, a tug built by the Eastern Shipping Co., Limited, was launched from their dockyards at Sungie Nyor, Province of Wellesley, last month. This vessel is 60 feet in length with an 11 foot bean and depth of 5 5 feet. She will be fitted with a marine multitubular boiler and compound condensing engines, cylinders 8.25 inch with 12 inch stroke capable of maintaining a speed of 10 knots.

PACIFIC MAIL INTERMEDIATE SERVICE.—The S. S. Persia is to be added to the intermediate trans-pacific service making a squadron of three in this class. The rate from Hongkong to San Francisco will be £25 and the return fare £37.10 while the fare from Hongkong to London via New York will be £45, and return £78.

THE O. S. K. CANADA MARU.—This vessel which is of 6,000 tons gross, a sister ship to the Tacoma Maru and one of the most modern freight boats on the Pacific, was launched from the Mitsubishi Yards, Nagasaki, January 11.

CHINESE IMPERIAL SHIPYARDS PROPOSED FOR SHANGHAI.—The Grand Councillors are considering the selection of a site for a shipbuilding yard at Shanghai to cost Tls. 5,000,000.

MITSUI BISHI DOCKYARD.—The Yamakaze, a large torpedo boat destroyer of 1,050 tons displacement, at Nagasaki last month. She will be equipped with Parson's steam turbine engines of 22,800 h. p. and develop 33 knots.

PACIFIC MAIL MANILA STEVEDORING CONTRACT.—Messrs. Simmie and Grilk have secured the contract for handling the cargo of the company's steamers at Manila which represents an average of 10,000 tons a month.

THE HONGKONG, CANTON & MACAO S. S. CO.—The credit at profit and loss at the end of the year including $18,026 brought forward from last account was $126,344 on a capital investment of $1,200,000. Out of this a dividend of $1.25 a share was paid and $20,000 carried forward.

MINES, MINERALS, AND THE METAL TRADE, MACHINERY, ETC.

SUGAR MILL MACHINERY FOR MINDORO AND FORMOSA.—The British Steamer Beachy is expected from Seattle via Honolulu with a shipment of lumber and 1680 tons of machinery to the order of the Mindoro Development Co. from the Honolulu Iron Works. There is also a shipment of sugar mill machinery from the Honolulu Iron Works to equip two twelve roller mills for Formosa to be delivered in April. Manager Hedemann is making a trip to the East to look over the situation at the invitation of the Japanese sugar men interested in Formosa.

F. M. S. TIN OUTPUT.—The total for December was 10,395 piculs.

STANDARD OIL IN NETHERLANDS EAST INDIA.—The American Company has been incorporated under the laws of Netherlands East India for the purpose of carrying on the oil war against the Royal Dutch Petroleum Company in its own territory. This company will extend its operations to India and engage in developing oil lands as well as refining.

THE STRAITS TRADING CO., LTD.—The profits for the half year amounted to $524,057 Strs. Cur. out of which a dividend of 10% and 5% bonus was declared; $50,000 placed in reserve and $86,664 forward.

THE PENCHIHU COAL MINE AND MAOKON IRON DEPOSIT.—It is understood that a joint Japanese and Chinese Company with a capital of 1,000,000 yen has been organized to develop these mines after a careful investigation is made as to their promise respecting the production of iron.

CEMENT IN SIAM.—During the last fiscal year there were 2,846 tons of cement imported from Tonkin and 8,511 tons from Denmark.

GERMAN STEEL WORKS FOR KIANCHAU.—German capitalists are considering the establishment of an extensive smelter and steel manufacturing plant near Kianchau to be controlled by the Shantung Mining Co.

THE LINOTYPE & MACHINERY CO. LTD.—Messrs. Jardine Matheson & Co. have secured the Shanghai agency for this company and display rooms have been secured on Szechuen Road where the machines will be exhibited. The Ewo Engineering Department of the company will take charge of this important agency under the direction of Manager W. J. Milne.

THE MITSUI BUSSAN KAISHA, LTD.—The second half-yearly report of the Mitsui Bussan Kaisha, Ltd., for the period ending October 31st, 1910, submitted to and passed by the general meeting of the shareholders on January 18th, 1911, has just reached the local office of the company. The net profits for the half year ending October 31st, 1910, were 2,509,325.75 Yen which, together with a balance brought forward from the last term, made 2,899 654.40 Yen which the general meeting appropriated as follows: Legal reserve 130,000 yen, Special reserve, 1,600,000 yen, Directors' fees, 130,000, Dividends, 700,000 yen. Balance carried forward to next term, 339,654.40.

TONGKAH HARBOR TIN CO.—This company declared a second interim dividend of 5% payable January 28. The following is an excerpt from the recent report of the directors for 1910:

Profit and Loss Account.—The accounts presented herewith show that a gross working profit was made of £26,551 18s. 10d., Add the Deposit forfeited by the Option Syndicate £1,000, Together with the Balance carried forward from September 30th, 1909, £4002 17s. 4d. A total of £31,554 16s. 2d.

Against this there are the following items:—Stamp Duty £416 13s. 4d. Balance new buckets, etc., now in use on No. 1, 2, and 3 Dredgers written off £5051, 12 2.

Depreciation—Furniture £73 10s. 0s. Workshop Plant £183 14s. 5d. Buildings £197 7s. 6d. 10% on Nos. 1, 2, and 3 Dredgers £3,954 1s. 10d. Total £4,408 13 9d. Grand total 9,876 19 2. Leaving a balance at credit of Profit and Loss A/c of £21,677 16 11.

Notwithstanding the satisfactory profit shown above, no dividend was declared during the 12 months, but taking the Company's present position and prospects into consideration, the directors anticipate making an early announcement of quarterly dividends, which they hope will be regularly maintained.

This company placed an order for two new dredgers with Messrs. Wm. Simons & Co, Ltd., of Renfrew, along special designs which will soon be operating. One of the dredgers arrived last month and is described as follows: Length between perpendiculars of 125 ft., over all, 191 ft. breadth 40 ft. and depth 8 ft., dredging to a depth of 45 ft., and having a dredging capacity of 840 cub. yards per hour.

THE PUSING BABRU TIN MINING CO., Ltd.—This company has declared a dividend of sixpence a share.

THE RAUB.—The total returns for the four weeks ended December 31, 1910, were 476 ounces of smelted gold and 1,225 amalgam.

THE ULU JOHAN MINING SYNDICATE, LTD.—This is a new company organized with a capital of $30,000 to develop a block of tin lands near Sorakai.

FINANCIAL, COMMERCIAL AND MISCELLANEOUS.

MANILA MUNICIPAL COLLECTIONS.—The total collections from all sources for the first half of the fiscal year 1911 amounted to ₱1,266,610 as against ₱1,230,378 81 the corresponding period 1910.

MELCHERS & CO. AT TSINGTAO.—This company has opened its new offices at Tsingtao where they are engaged in general import and export and shipping business.

ZAMBOANGA FAIR.—A most successful exposition is in progress at the capital of the Moro province, the attendance being large from all parts of the Philippines.

KOREAN BEAN CROP.—The total yield of beans for 1910 is estimated at 10,000,000 bushels and the export up to the end of November reach a value of 4,700,000 yen.

CHINESE MILITARY DEPARTMENT.—A report from Peking is to the effect that on account of lack of funds only 25 divisions will be organized instead of 36 as proposed.

BANCO ESPAÑOL FILIPINO.—At the annual meeting the following officers were elected: President, J. S. Hord; Vice President, D. G. Marzano; Directors, Thomas L. Hartigan, Juan J. Tuason, A. R. Roxas, Edilberto Calixto, Felix Roxas, Mariano Limjap, Fernando Zobel, Enrique Barrera, Maximino Paterno, Paul Hube, Bernardino Hernandez, Emilio Moreta, Cu Un Jieng, S. M. Jones.

THE AMERICAN-CHINESE BANK.—According to latest advices this institution will have a capital of Tls. 10,000,000 subscribed equally by Chinese and Americans with head office in Shanghai and branches throughout China and America.

THE HONGKONG AND SHANGHAI BANKING CORPORATION.—The following is an excerpt from the directors' report for the half year ended December 31:

The net profits for that period, including $2,029,390 83, balance brought forward from last account after paying all charges, deducting interest paid and due, and making provision for bad and doubtful accounts, amount to $5,249,606 46.

The Directors recommend the transfer of $250,000 from the Profit and Loss Account to credit of the Silver Reserve Fund, which Fund will then stand at $16,250,000.

After making this Transfer and deducting Remuneration to Directors there remains for appropriation $4,984,606.46, out of which the Directors recommend the payment of a Dividend of Two Pounds Sterling per Share, viz.: £240,000 and a Bonus of Five Shillings Sterling per Share, viz: £30,000 amounting in all to £270,000 which at 1/10 the rate of the day, will absorb $2,945,454.55.

The Balance $2,039 151 to be carried to New Profit and Loss Account.

Sterling reserve fund.—The holding of £1,200,000 2½ per cent Consols has been written down to 79. This was effected by the purchase at about par of £15,000 other Sterling Securities, making our holding under this heading £340,000 written down to £287,400. The cost of this adjustment was met out of the earnings of the halfyear.

Directors.—The Honourable Mr. Henry Keswick has been elected Chairman for the year 1911, and Mr. G. H. Medhurst Deputy Chairman.

Mr. J. W. Bandow and Mr. E Shellim having resigned their seats, Mr. G. Friesland and Mr. W. Logan have been invited to fill the vacancies; these appointments require confirmation at the Meeting.

Mr. H. A. Siebs, Mr. R. Shewan and Mr. G. Balloch retire in rotation, but being eligible for re-election, offer themselves accordingly.

Auditors.—The Accounts have been audited by Mr. W. Hutton Potts and Mr J. W. C. Bonnar, who offer themselves for re-election.

PHILIPPINE POSTAL SAVINGS BANK.—On February first 45 new branches were opened in different parts of the islands.

THE WEST POINT BUILDING CO., LTD.—This company paid a dividend of $4 for 1910 as against $3.80 the previous year.

AMERICAN CAPITAL TO TAKE OVER A. S. WATSON & CO., MANILA BRANCH.—A corporation with a capital of ₱500,000 has been organized to purchase this old reliable house and continue the business. The officers of the corporation are:

R. N. Clark, president; Assistant Manager Taylor of the International Bank, vice president; Jerome Prager, secretary-treasurer; and Dr. Tee Han Kee, F. W. Breaker, C. W. O'Brien, George I. Franks and John T. Pickett, directors.

THE PARSONS HARDWARE CO.—The well-know firm of J. Parsons, general hardware and machinery dealers, have incorporated with Mr. W. Parsons, president. The announcement will be made in the near future.

THE FILIPPINO HOME MUTUAL BUILDING AND LOAN ASSOCIATION.—This association was recently organized with an authorized capital of ₱3,000,000.00 in shares of ₱200 each.

PHILIPPINE HAT MAKING

The PHILIPPINE JOURNAL OF SCIENCE, Volume VI, Section C, No. 2, will include a paper by Dr. C. B. Robinson on the subject of Philippine hats.

The work covers the whole field of the subject, the origin and history of hat making so far as the Philippines are concerned, the materials used, methods of preparation, the actual hats and the difference between them, their prices, statistics of the export trade in them, brief comparison with the products of other countries in the eastern tropics, and the commercial situation and outlook. It embodies also short notes on mat making and other allied industries. The headings are as follows: introduction, seat of industry, history, species of plants used, means of distinguishing the principal kinds of Philippine hats, bamboo hats, buri hats, buri-leaf hats, buntal hats, and buri-midrib or Calasiao hats, pandan hats including sabotan, balangot hats, hemp hats, nito hats, ticog or tayoctayoc hats, materials of minor importance, straw hats, salacots, mat making, cigar cases and cigarette-cases, bags and baskets, general considerations and acknowledgments.

This will be an extensive, well illustrated article, the result of much research work, extending over a period of many months. For those interested in hat manufacturing the work would be found authoritative and valuable.

LONDON METAL MARKET

The following are to-nigth's (December 30) prices of metals:—

COPPER.	£	s.	d.		£	s.	d.
*Tough cake and ingot	59	10	0	..	60	0	0
*Best selected	59	10	0	..	60	0	0
*Electrolytic	60	15	0	..	61	5	0
*Sheets and sheathing	72	0	0	..	—		
*Flat bottoms	75	0	0	..	—		
STANDARD †Cash	56	0	0	..	56	2	6
STANDARD †Three Months	56	15	0	..	56	17	6
*Copper tubes, seamless per lb.	0	0	8⅜	..	—		
*Lake	61	10	0	..	62	0	0

* Less 8½ per cent. † Net.

ALLOYS.	£	s.	d.		£	s.	d.
BRASS: Wire	0	0	6¾	..	—		
,, Tubes (solid drawn)	0	0	6¾	..	—		
,, Sheets	0	0	6⅝	..	—		
TIN.							
English ingots, f. o. b.	174	0	0	..	175	0	0
,, bars	175	0	0	..	176	0	0
,, refined	176	0	0	..	177	0	0
Straits... Cash	174	10	0	..	174	15	0
Straits... Three months	173	15	0	..	174	0	0
Australian spot	—			..	—		
Banka (in Holland) Cash	172	5	0	..	—		
Banka (in Holland) Three months	172	10	0	..	—		
LEAD.							
Spanish or soft foreign	£13	0	0	..	13	1	8
English pig, common	13	5	0	..	13	7	6
,, L. B.	13	15	0	..	—		
,, sheet and bar lead	14	17	6	..	—		
,, pipe	15	7	6	..	—		
,, red	15	17	6	..	—		
,, white	19	15	0	..	—		
,, patent shot	16	5	0	..	—		
SPELTER.							
Silesian ordinary brands	23	17	6	..	24	0	0
,, special brands	24	5	0	..	24	10	0
English Swansea	—			..	—		
Sheet zinc	29	5	0	..	—		
ANTIMONY.							
Antimony	27	0	0	..	29	0	0
,, Crude	12	0	0	..	13	10	0
,, Ore (basis 50%)	28	15	0	..	—		
QUICKSILVER.							
Flasks, 75 lbs. warrants	8	0	0	..	—		
ALUMINIUM.	Per ton.				Per ton.		
98-99 per cent.	66	10	0	..	67	10	0
NICKEL.	Per ton.				Per ton.		
98-99 per cent. guaranteed	167	10	0	..	171	0	

PLATINUM.

Per oz. Troy, 160s.; nominal and subject to negotiation.

The Mining Journal.

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, February 3, 1911.

STOCK.	When Established	CAPITAL	No. of Shares	Value	Paid Up	Reserve	At Working Account	Date	Last Dividend.	Approximate Yield per cent per annum at Present Quotation	Closing Quotations
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	120,000	$125	$125	g £1,500,000 s $16,000,000 i $250,000	$2,029,390	31-6-10	£2. for first half year ending 30-6-10, @ ex 1/9⅝ = $22.456	4½%	$920 £89-15/-
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	e £4,079 $400,000	$34,167	31-12-09	$2 (London 3/6) for 1908	—	$80 buyers
MARINE INSURANCES.											
Canton Insurance Office, Ld.	1881	$2,500,000	10,000	$250	$50	$1,600,000 j $268,696 u $305,181	Nil.	31-12-08	$15 for 1909	8½%	$180 sellers
North China Insurance Co., Ld.	1903	£150,000	10,000	£15	£5	g £125,000 s Tls. 225,000 u Tls. 368,644 f Tls. 137,308	Tls. 205,719	30-6-10	Final dividend of 7½% for 1909 making 15% in all....	5%	Tls. 160 sellers
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	s $3,000,000 g £90,000 f $287,984 j $1,449,735 u $713,985	2,552,545	31-12-09	Final of $20 per share, making in all $50 per share for 1908, and an int. div. of $30 per share for 1909	6%	$825
Yangtsze Ins. Association, Ld.	1889	$1,200,000	12,000	$100	$60	$1,000,000 j $371,802 £169,861	$797,602	31-12-09	$12 for year ending 31-12-08 and interim of $3 on account of 1909	6%	$200
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 s $550,348 f $61,168	$438,406	31-12-09	$6 and bonus $2 for 1908	6½%	$120 buyers
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,460,000 j 81,153	$426,218	31-12-09	$27 for 1908	7½%	$365
SHIPPING.											
China & Manila Steamship Co., Ld.	1882	$750,000	1) 30,000	$25	$25	i $57,734	Dr. $3,777	31-12-09	$4% for 1906	....	$7½ buyers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$230,000 i $100,589	Nil.	30-6-10	$2½ for year ending 30-6-1908	—	$17 buyers
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	e $250,000 d. i. $630,000 f $130,545 $ 19,106	$18,026	30-6-10	Dividend of $1½ for half year ending 30.6.1910	8½%	$31½ sellers
Indo-China Steam Navigation Co., Ld. (Preferred) Do. Do. (Deferred)	1882	m £600,000	2) 60,000 2) 60,000	£5	£5	£138,100	£15,162	31-12-08	3% = 3/- on Preferred shares only for 1910	2½%	$56
"Shell" Transport & Trading Co. Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£120,000 i £1,000,000	£205,868	31-12-09	Final div. of 2/6 per share (coupon 14) making in all 4/6 per share for 1909, and an int. div. of 1s. per share on % for 1910	5%	90/- £11 buyers
"Star" Ferry Co., Ld.	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$6,500 i $55,830	$1,159	30-4-10	A dividend of 7% and bonus of 5% making 12% for year ending 30.4.1910	5% 6%	$23 $12
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	e $520,000 r $83,620	Dr. $8,090	31-12-09	$5 for half year ending 30-6-1910.	6%	$112 sellers
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	Dr. $101,851	31-12-09	$3 for 1897	—	$18 sellers
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	d £215,000 h £12,289	....	..	Final div. of 1/6 for the year 1910 making 15% (coupon 15)	9%	Tls. 13½ sellers
Headwaters Mining Co.	1908	₱600,000	28) 600,000	₱10	₱10				First year		₱10
Raub Australian Gold Mining Co., Ld.	1892	£200,000	200,000	£1	£1	£4,873	Dr. $6,583	13-4-10	1/2 per share, 13th div.	5%	$3 sellers
Oriental Consolidated Mining Co. Ld.	....	g $5,000,000	500,000	g $10	$10	none	....	..	Final of gold $0.65 for 1909 in all g. $1.15	..	32/6
DOCKS, WHARVES AND GODOWNS											
Fenwick (Geo.), & Co., Ld.	1889	$450,000	s 18,000	$25	$25	$25,275	Dr $8,460	31-12-09	$1½ for year ending 31-12-06	....	$5
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$3,000,000	60,000	$50	$50	$550,000 i $31,993 i $40,000	$4,848	31-12-09	$2½ for 1909	4½%	$53½ sellers
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	i $88,214 v $221,000	$148,940	30-6-10	3% for half year ended 30-6-1909	..	$57
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	....	..	Final of Tls. 3½ making Tls. 6 in all for year 30-4-1910	9%	Tls. 67
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	36,000	Tls. 100	Tls. 100	b Tls. 697,257 r Tls. 50,000 e Tls. 125,000	....	..	Interim of Tls. 3 for 1910	7	Tls. 100
LANDS, HOTELS AND BUILDINGS.											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 35,000	Tls. 4,314	29-2-09	Tls. 6 for year ending 29-2-10	5½	Tls. 95 sellers
Central Stores, Ld.	—	$751,845	16) 50,123	$15	$15	n. $1,000	$1,000	31-12-08	8% for 1909	....	$11 sellers
Hongkong Hotel Co., Ld.	1866	$600,000 $400,000	12,000 8,000	$50 $50	$50 $25	$648,975 r $20,000	$21,477	30-6-10	$3 on old shares, $1.50 on new shares, for half year ending 30-6-10	5½%	$103 buyers $64 buyers
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	$27,971	31-12-10	Final Dividend of $3.50 per share for 1910	7%	$97 sellers
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $226,945 20) $25,856	$5,471	31-12-09	45 cents for 1909	5½%	$7 buyers
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$269	31-12-09	$2½ for 1909	8%	$35 sales
Shanghai Land Investment Co., Ld.	1888	Tls. 3,900,000	78,000	Tls. 50	Tls. 50	Tls. 1,523,045 e Tls. 300,000	Tls. 63,969	31-12-09	Interim of Tls. 3 for 1910	6½	Tls. 98
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,958	31-12-10	Final Dividend of $2.20 per share making $4 in all for year 1910	8½	$43 buyers
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 250,000	Tls. 10,991	31-10-09	Tls. 11 for year ended 31-10-09	13%	Tls. 85
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	e 20,000	$26,297	30-7-09	50 cents for year ending 31-7-08	—	$5 buyers

FAR EASTERN STOCKS AND QUOTATIONS—(CONTINUED.)

STOCK.	WHEN ESTABLISHED	CAPITAL.	NO. OF SHARES.	VALUE	PAID UP.	RESERVE	AT WORKING ACCOUNT.	DATE.	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.	CLOSING QUOTATIONS
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 175,000	Tls. 8,372	30-9-09	Tls. 7½ for year end. 30-9-09 (10%)	10%	Tls. 53
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	8,000	Tls. 100	Tls. 100	none	Tls. 4,829	31-12-08	Tls. 6 for 1909	10%	Tls. 59
Soy Chee Cotton Spinning Co., Ld	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	f Tls. 31,173	Tls. 31,173		Tls. 35 for 1909	17%	Tls. 240
MISCELLANEOUS											
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377.10s.	11) 8,604	12/6	12/6	£1,500	£797	31-12-09	15% for 1909		$8 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	$40,000	Nil.	31-12-08	5% for 1909	6½	$9
China Light & Power Co., Ld. / Do. do. Special Shares	1901 / 1907	$300,000	50,000 / 17) 50,000	$5 / $1	$5 / $1	none	$50,242	31-7-10	60 cents for year ending 28-2-06		95 cts. buyers
China Provident Loan & Mortgage Co., Ld.	1898	a $1,250,000	7) 125,000	$10	$10	$81,000	$450	31-12-09	80 cents for 1910	10%	$7½ ex div. sellers
Dairy Farm Co., Ld.	1896	$300,000	40,000	$7½	$6	l $10,000 / $10,000	$1,850	31-7-09	$1.20 for year ending 31-7-09	6⅔%	$17½ buyers
Green Island Cement Co., Ld.	1897	$4,000,000	400,000	$10	$10	$14,000	$4,290	31-12-09	Interim of 15 cts. per share for 1910	15	$3½ sales
H. Price & Co., Ld.	1907	$120,000	19) 15,000	$10	$10	none	$1,923.87	31-12-09	14% vis $1.40 for 1909	12%	$12
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$11,798	28-2-10	A dividend of $1.20 per share and a bonus of 10 cts. per share for year end. 28-2-10.	6½	$21 buyers
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	$25	k $150,000	$12,662	31-12-09	Interim of $2 per share for 1910	....	$150 buyers
Hongkong Rope Manufacturing Co., Ld.	1883	$600,000	$60,000	$10	$10	$40,000	$9,176	31-12-09	Interim of $1 per share for 1910	10⅓%	$18⅔
Maatschappij tot Mijn-, Boschen Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	250,000	Glds. 10	Glds. 10	21 Tls. 547,500 / Tls. 547,500 / f Tls. 63,914	Tls. 316,682	31-12-08	3rd Interim Div. of Tls. 15 making in all Tls. 37½ for 1910	5	Tls. 122
Peak Tramways Co., Ld. / Do. (New)	1907	$750,000	25,000 / 50,000	$10 / $10	$10 / $10	$20,000	$3,014	30-4-10	80 cents on fully paid shares & 8 cents on $1 paid shares for year ending 30-4-10	5½ / 5	$13 sellers / $1½ sellers
Philippine Co., Ld.	1904	$750,000	75,000	$10	$10	none	Ps. 2,875	31-12-09	None	—	$8
Robinson Piano Co., Ltd.	1900	$200,000	22) 4,000	$50	$50	$5,000	$61,138	31-8-08	6% for ½ year ending 30.9.07	—	$50
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 / u Tls. 100,000	Tls. 5,250	31-10-08	No dividend this year	2	Tls. 120 sellers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	Dr. $31,096	31-8-09	None	—	$25
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	$127,86	31-5-10	50 cents for year ending 30-5-10	8	$6
Union Waterboat Co., Ltd.	1905	$500,000	15) 50,000	$10	$10	w $11,956	$687	31-12-08	5% for year ending 31-12-10	6½	$7½ sales
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$46,000	$471	31-5-10	15% per ordinary share for year ended 31-5-10	5	$11½ sellers
Watkins, Ltd.	1899	$100,000	10,000	$10	$10	none	$19,41	31-12-09	3½ for 1909	—	$3 sellers
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	$300,000 / s) $25,000	$1,776	31-12-09	3% for 1909	5%	$5½ buyers
Weismann Limited	1904	$30,000	3,000	$10	$10	$12,250	$67	31-7-10	10 per cent for year endg. 31.7.10.	8%	$12 buyers
William Powell, Ld.	1901	$105,000	15,000	$7	$7	none	$782	30-6-09	30 cents making 80 cents for year ending June 30th 1906	—	$2½
Societe des Pulpes et Papeteries du Tonkin		660,000	13,200	50 Haiphong	35 Currency	—	.	....	First year	—	$36 (Hk.Cy.) sel.

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE.	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E.	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par. (Plus interest)
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡	Hongkong & Shanghai Banking Corporation.	$750,000	$500	§ all	Half yearly, June 30th and December 31st	par. (Plus interest)
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902	Hongkong & Shanghai Banking Corporation.	Tls. 543,900	Tls. 100	....	Half yearly, June 30th and December 31st	Tls. 103½ (Plus interest)
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903	Hongkong & Shanghai Banking Corporation.	Tls. 500,000	Tls. 100	....	Half yearly, January 1st and July 1st	102½ (Plus interest)
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par. (Plus interest)
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	‖	Half yearly, March 31st and Sept. 30th	Tls. 97½. (Plus interest)

a Authorised capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange and Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repair Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 4,000 shares unissued.
2 First issue of 60,000, of which 10,411 unallotted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unallotted.
6 1,616 shares unallotted.
7 75,000 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 40,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 399 shares unissued.
15 22,277 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 50,000.00.
19 12,000 issued only.
20 Typhoon and Floods Insurance Fund.
21 Special Cash Reserve.
22 1000 shares unissued.
23 10,000 shares unissued.
24 4595 part paid shares.
25 7,500 shares unissued.
26 10,000 shares unissued.
27 2,350 shares unissued.
28 25,000 shares unissued.
29 10,000 shares unissued.
30) 3,700 fully paid vendor shares and an option of 5,000 shares at par for 5 years granted to option holders.
*Based on last year's dividend.
** Based on present dividend.
§ 216 held by the Company.
‖ Only Tls. 134.000 taken up.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Comp., the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 95.
*** Redeemable at par on 30th June, 1915.
Dr. Deficit.
†† Singapore dollars.
‡‡ 4,880 shares unissued.
X 16,756 shares unissued.
§§ 25,000 shares unissued.
4140 shares unissued.

ADDITIONAL SHANGHAI SHARE QUOTATIONS

December 30, 1910

STOCK	CLOSING QUOTATIONS	HIGHEST AND LOWEST PRICES DURING THE WEEK	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	LAST DIVIDEND	WHEN PAID
Vulcan Iron Works, Limited....	Tls. 10		Tls. 500,000	1,000	Tls. 500	Tls. 500	—	Tls. 50 for year ended 31.8.06......	Nov. 1, 1906
Yangtsze Wharf & Godown Co. Limited..........	Tls. 195		Tls. 250,000	2,500	Tls. 100	Tls. 100	Tls. 50,000	Tls. 15 for 1909..........	April 1, 1910
Wei-hai-wei Land & Building Co., Limited..........	Tls. 8 nominal		Tls. 91,850	3,674	Tls. 25	Tls. 25	—	Interim of $2.00 for 1909..........	Aug. 8, 1909
Anglo-German Brewing Co., Limited..........	$80 sellers		$100,000	4,000	$100	$100	none	5% for 1909..........	Mar. 12, 1910
Butler Tile Works, Limited.....	Tls. 23		Tls. 60,000	1,200	Tls. 50	Tls. 50	—	Tls. 3 for year ending 31.3.09......	June 8, 1909
Major Bros., Limited......	Tls. 40		Tls. 300,000	6,000	Tls. 50	Tls. 50	—	——	—
Oriental Ice Company, Limited.	Tls. 25		Tls. 130,000	2,600	Tls. 50	Tls. 50	—	First year..........	—
Scharffs Oil and Bone Mills, Ltd.	Tls. 40		Tls. 200,000	4,000	Tls. 50	Tls. 50	—	First year..........	—
Shanghai Ice Company, Limited.	Tls. 13		Tls. 200,000	8,000	Tls. 25		—	6 for 1909..........	Mar. 14, 1910
Dunning & Company, Limited..	$33 sales		$100,000	2,000	$50	$50	—	$5 year ending 28.2.08..........	Apr. 15, 1908
J. Llewellyn & Co., Limited.....	$60 nominal		$72,000	1,200	$60	$60	—	7.20 for 1909..........	May 1, 1910
Lane, Crawford & Company.....	$120		$250,000	2,500	$100	$100	—	10% for year 1909..........	Apr. 28, 1910
S. Moutrie & Company, Limited.	$20		$250,000	5,000	$50	$50	—	$2 for year ended March 31, 1909.	June 18, 1909
Weeks & Company, Limited...	$23		$400,000	20,000	$20	$20	$40,000	Final of 6% making 10% for 1909..	June 1, 1910
Dominion Rubber Co., Limited.	Tls. 30		Tls. 225,000	22,500	Tls. 10	Tls. 4	—	First year..........	—
Senawang Rubber Estates Company, Limited..........	Tls. 50		Tls. 250,000	2,500	Tls. 100 Tls. 100	Tls. 100 Tls. 75	—	20% for year ending May 31 1910...	May 9, 1910
Tebong Rubber and Tapioca Estates, Limited..........	Tls. 20		£76,000	76,000	£1	£1	—	50 cents for 1909..........	Sept 2, 1910
Shanghai Mercury, Limited.....	Tls. 55		Tls. 105,500	2,100	Tls. 50	Tls. 50	—	Final of 6% making 16% year 1909.	June 22, 1910
Shanghai Mutual Telephone Co., Limited..........	Tls. 64		Tls. 675,000	13,500	Tls. 50	Tls. 50	—	Tls. 3 for 1907..........	June 28, 1909
China Export, Import & Lumber Company, Limited..........	Tls. 75 sales		Tls. 350,000	500	Tls. 100	Tls. 50	—	5 p. c. for 1909..........	May 1, 1910
China Printing Co., Limited.....	Tls. 50		Tls. 750,000	1,500	Tls. 50	Tls. 50	—	7% 1908..........	Apr. 18, 1909
Hirano Mineral Water Co., Ltd.	Y. 10		Y. 125,000	5,000	Y. 25	Y. 25	—	10%=yen 2½ for year ending 30th Sept. 08 Y. 1.20 for year ended Feb. 29..........	Apr. 26, 1909
Shanghai Electric & Asbestos Company, Limited..........	$21 sellers		$125,000	5,000	$25	$25	—	8% for year ended Feb. 28, 09....	June 21, 1909
Shanghai Electric Construction Company, Limited..........	£6/5	£11	£320,000	32,000	£10	£10	—	First year..........	—

DEBENTURES

LOANS	PRICE—PLUS ACCRUED INTEREST	AMOUNT OF LOAN	OUTSTANDING	NOMINAL VALUE	RATE OF INTEREST	WHEN PAYABLE
Shanghai Municipal Debentures..........1892	Tls. 97	Tls. 45,400	Tls. 45,400	Tls. 100	5 %	June & Dec.
do 1893	,, 100	,, 46,200	" 32,000	" 100	5½ ,,	Do
do 1894	,, 106	,, 60,000	" 60,000	" 100	6 ,,	Do
do 1895	,, 97	,, 107,600	" 32,600	" 100	5 ,,	Do
do 1896	,, 97	,, 117,300	" 181,800	" 100	5 ,,	Do
do 1897	,, 97	,, 268,400	" 268,400	" 100	5 ,,	Do
do 1898	,, 106	,, 60,000	" 60,000	" 100	6 ,,	Do
do 1900	,, 100	,, 81,700	" 31,700	" 100	5½ ,,	Do
do 1901	,, 106	,, 77,000	" 200,000	" 100	6 ,,	Do
do 1902	,, 106	,, 145,000	" 150,000	" 100	6 ,,	Do
do 1903	,, 106	,, 430,500	" 490,500	" 100	6 ,,	Do
do 1904	,, 106	,, 164,500	" 214,500	" 100	6 ,,	Do
do 1905	,, 106	,, 285,900	" 320,000	" 100	6 ,,	Do
do 1907	,, 106	,, 500,000	" 250,000	" 100	6 ,,	Do
do 1908	,, 250 scarce	,, 650,000	" 354,400	" 250	6 ,,	Do
do 1909	,, 97½	,, 300,000	" 250,000	" 100	6 ,,	Do
Chinese Imperial Government Loan..........1886 E	,, 102½	,, 354,400	"	" 100	7 ,,	Mar. & Sept
Shanghai Land Investment Co., Debentures..........1892	,, 95	,, 250,000	" 250,000	" 100	6 ,,	May & Nov.
do 1894	,, 104	,, 250,000	" 250,000	" 100	6 ,,	Mar. & Sept.
do 1896	,, 104	,, 250,000	" 250,000	" 100	5 ,,	June & Dec.
do 1900	,, 95	,, 250,000	" 250,000	" 100	6 ,,	April & Oct.
do 1901	,, 104	,, 250,000	" 100,000	" 100	6 ,,	June & Dec.
do 1901	,, 104	,, 100,000	" 400,000	" 100	5 ,,	May & Nov.
do 1902	,, 104	,, 400,000	" 250,000	" 100	6 ,,	June & Dec.
do 1905	,, 104	,, 250,000	" 815,900	" 100	6 ,,	Do
Shanghai Waterworks Co., Debentures..........1909	,, 104	,, 865,900	"	" 100	6 ,,	April & Oct.
Shanghai Gas Co., Debentures..........1909	,, 106	,, 775,000	" 800,000	" 100	5 ,,	Do
Shanghai and Hongkew Wharf Co., Debentures..........1902	,, 105 scarce	,, 1,000,000	" 799,800	" 100	6 ,,	June & Dec.
Astor House Co., Debentures..........1905	,, 100	,, 750,000	" 500,000	" 100	7 ,,	Do
British Municipal Council, Hankow..........1901	Sh. ,, 100	H'kow Tls 100,000	H'kow Tls 100,000	" 100	7 ,,	June & Dec.
Shanghai Club Debentures..........1907	,, 100	Tls. 170,000	Tls. 170,000	" 100	6 ,,	Do
Country Club Debentures..........	,, 102½	,, 139,000	" 139,000	" 100	6 ,,	Do
do 1907	,, 102	,, 92,000	" 92,000	" 100	6 ,,	Do
Lane Crawford & Co., Debentures..........1907	,, 105	,, 110,000	" 110,000	" 100	7 ,,	Mar. & Sept.
Anglo-French Land Debentures..........1908	,, 102	,, 250,000	" 250,000	" 100	6 ,,	June & Dec.
Central Stores Ltd. Debentures..........1908	,, 102½	,, 250,000	" 250,000	" 100	8 ,,	Do
Shanghai Mutual Tel. Co. Debentures..........1909	,, 102½	,, 200,000	" 200,000	" 100	6 ,,	Do

SINGAPORE SHARE QUOTATIONS

(Courtesy Messrs. Fraser & Co., Brokers, Singapore, January 26, 1911)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers.
								MINING		
1903	$300,000	300,000	30,000	10	10	......	10% interim..........	Belat Tin Mining Co., Ltd..........	4.85	5.00
1907	$300,000	225,000	22,500	10	10	......		Bruang Ltd..........	6.00	6.25
1901	$600,000	600,000	60,000	10	10	25,000	6% for year ending 30-4-09..........	Bruseh Hydraulic Tin Mining Co., Ltd..........	....	5.00
1907	$400,000	375,000	37,500	10	10	......		Kanaboi, Ltd..........	1.50	1.75
1901	£60,000	60,000	60,000	1	1	......	6/- interim 1910..........	Kinta Tin Mines, Ltd..........	16.75	17.50
1905	$150,000	99,000	9,900	10	10	6,485.68	35% for year ending 31-12-07..........	Kuantan Tin Mining Co., Ltd..........	2.00	3.00
1906	£120,000	120,000	120,000	1	1	......	1/- interim 1909..........	Lahat Mines Ltd..........	8.75	9.25
1906	$450,000	450,000	45,000	10	10	......		Malacca Tin Dredging Co., Ltd..........	....	1.50
1906	£30,000	30,000	30,000	1	1	......		Malaya and Siam Corporation Ltd..........	....	7/6
1906	£250,000	179,500	500,000e	5/-	5/-	......		Pahang Consolidated Co., Ltd..........	4/6	5/6
1907	£100,000	80,000	80,000	1	1	......		Pengkalen. Ltd..........	4.00	4.50
1904	£100,000	80,000	80,000	1	1	......	6/- interim..........	Pusing Bahru Tin Mines, Ltd..........	7.75	8.25
1904	£120,000	100,000	100,000	1	1	6,000	6/- interim..........	Pusing Lama Tin Mines, Ltd..........	2.25	2.75
1907	$450,000	300,000	30,000	10	10	......		Rahman Hydraulic Tin, Ltd..........	10.50	11.00
1905	£40,000	£40,000	40,000	1	1	......		Rahman Tin Co., Ltd..........	10.50	11.00
1905	£27,000	27,000	27,000	1	1	......	1/- for 1907..........	Rambutan, Ltd..........	....	9.00
1892	£200,000	200,000	200,000	1	1	4,873	1/2 paid April, 1910..........	Raub Aust. Gold Ming. Co., Ltd..........	2.35	2.50
1905	£40,000	40,000	40,000	1	1	......		Redhills Tin Mining Co., Ltd..........	2.50	3.50
1900	$110,000	110,000	22,000	5	5	......	3% for year ending 22-1-09..........	Royal Johore Tin Mining Co., Ltd..........	....	1.25
1907	$550,000	500,000	50,000	10	10	......		Salak South, Ltd..........	....	1.00
1907	£80,000	80,000	80,000	1	1	......		Sempam Tin Mines, Ltd..........	1.00	1.50
1906	$850,000	850,000	85,000	10	10	25,000	5% interim 1910..........	Serendah Hydraulic Tin Ming. Co., Ltd..........	5.00	5.50
1899	$230,000	230,000	23,000	10	10	......	3% for ½ year ending 31-12-08..........	Sipiau Tin Co., Ltd..........	1.75	2.25
1909	$200,000	$150,000	15,000	10	10	......		Sungei Gau Tin Mining Co., Ltd..........	....	3.00
1907	£90,000	70,000	70,000	1	1	......	6/- during 1910..........	Tekka, Limited..........	12.50	22.50
1906	£150,000	150,000	150,000	1	1	......	1/- interim 1909..........	Tongkah Harbour Tin Dredging Co., Ltd.	12.00	12.50
1902	£160,000	160,000	160,000	1	1	......	7/- during 1910..........	Tronoh Mines. Ltd..........	15.00	15.50

SINGAPORE SHARE QUOTATIONS.—(Continued)

Date of Formation	Capital	Capital paid up	No. of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers.
								STERLING RUBBER		
1909	£85,000	78,225	782,250	2/-	2/-	——		Allagar Rubber Estates, Ltd	4/2	4/6
1905	£150,000	150,000	1,500,000	2/-	2/-	——	75% interim	Anglo-Malay Rub. Co., Ltd.	20/3	21/9
1909	£50,000	47,000	470,000	2/-	2/-	——		Batang Malaka Rubber Estates, Ltd.	2/-	2/5
1904	£30,000	26,750	26,750	1	1	——	35% interim	Batu Caves Rub. Co., Ltd.	15.10.0	16.0.0
1906	£80,000	67,800	67,800l*	1	1	——	2½% for 1909	Batu Tiga (Selangor) Rubber Co., Ltd.	4.1.3	4.7.6
1909	£100,000	74,454	57,818	1	1	——	6½% for 18 months ending 30-6-10	Bukit Kajang Rubber Estates, Ltd	2.3.3	2.6.0
			22,184n*	1	15/-	——	" " " " "	" " " part paid	1.2.6	1.5.0p.
1907	£30,000	25,500	24,000	1	1	——	30% for year ending 30-6-10	Bukit Lintang Rubber Estates, Ltd.	4.0.0	4.5.0
			6,000	1	5/-	——		" " part paid	2.2.6	2.7.6p.
1903	£70,000	66,700	66,700	1	1	2,000	25% interim	Bukit Rajah Rubber Co., Ltd.	14.17.6	15.10.0
1906	£35,000	35,000	35,000	1	1	——		Castlefield (K.) R. Estate, Ltd.	5.7.6	5.17.0
1909	£225,000	176,036	1,760,860	2/-	2/-	——		Chersonese (F.M.S.) Estates, Ltd	3/1	3/8
1904	£16,000	16,000	100,000	2/-	2/-	——	50% interim	Cicely Rubber Estates Co., Ltd	2.3.1	2.5.0
			60,000	2/-	2/-	——	54½% interim	" " " " 5% Pref.	2.3.1	2.5.0
1905	£75,000	62,007	620,070	2/-	2/-	1,000	50% interim	Consolidated Malay Rub. Estates, Ltd.	1.1.	1.3.6
1906	£110,000	110,000	110,000	1	1	——	50% interim for 1910	Damansara (Selangor) Rubber Co., Ltd.	6.7.6	6.15.0
1903	£600,000	447,200	447,200a	1	1	——		Duff Development Co., Ltd.	11/-	12/-
1909	£15,000	42,500	425,000	2/-	2/-	——	15% interim	Edinburgh Rub. Estates, (Selangor) Ld.	10/-	11/-
1907	£80,000	70,000	70,000	1	1	——	25% interim	Golconda Rubber Co., Ltd.	5.0.0	5.5.0
1909	£82,000	£82,000	820,000	2/-	2/-	——		Heawood Tin and Rubber Estate, Ltd.	5/4	6/-
1906	£310,000	307,770	307,770	1	1	8,784	30% interim	Highlands & Lowlands Para Rub. Co., Ltd.	4.13.9	5.0.0
1904	£50,000	30,000	30,000	1	1	2,500	100% for year ending 30-6-10	Inch Kenneth Rubber Estates, Ltd.	11.15.0	12.5.0
1909	£200,000	143,750	775,000p	2/-	1/-	——	15% for eleven monhts end. 30-6-10	Kam. (P.) R. & T. Co., Ltd. "A" Shares	3/10	4/6 p.
			105,000	1	1	——	" " " " "	" " " " "B" "	—	nom.
1905	£70,000	70,000	70,000	1	1	——	20% interim	Kapar Para Rubber Estates, Co., Ltd	8.0.0	8.10.0
1909	£35,000	£21,125	95,000	2/-	2/-	——		Kota Tinggi Johore Rubber Co., Ltd.	—	2/-
			155,000	2/-	1/-	——		" " " "	0/3	0/6 p.
1906	£180,000	180,000	180,000	1	1	....	75% interim	Kuala Lumpur Rubber Co., Ltd	7.5.0	7.17.6
1907	£100,000	100,000	1,000,000	2/-	2/-	——	30% interim	Labu (F. M. S.) Rub. Co., Ltd.	13/6	14/6
1907	£320,000	£252,067/10/-	198,930v	1	1	3,000	10% interim	Lanadron Rubber Estates, Ltd	4.2.6	4.10.0
			70,850	1	15/-	——	10% interim	" " " part paid	3.5.0	3.12.6p.
1908	£125,000	75,000	60,000g*	1	1	——	10% interim	Ledbury Rubber Estates Ltd.	3.0.0	3.7.6
			40,000	1	7/6	——	10% interim	" " " part paid	1.12.6	1.17.6p.
1895	£100,000	98,324 8/-	883,244w	2/-	2/-	4,000	150% interim	Linggi Plantations Ltd.	2.3.6	2.6.0
			10,000	1	1	——	7% for 1909	" " " 7% Pref.	...	nom.
1907	£160,000	140,000	1,400,000k	2/-	2/-	——	10% interim	London Asiatic R. & Produce Co., Ltd.	12/3	13/3
1909	£220,000	147,500	50,000	1	1	....		Lumut Rubber Estates, Ltd.	...	nom.
			150,000	1	3/-	....		" " " " part paid	12/6	14/- p.
1906	£400,000	300,000	185,000	1	1	——	10% interim for 1909	Malacca Rubber Plants., Ltd.	7.15.0	8.5.0
			115,000	1	1	....	" " "	" " " " 7½% Pref.	7.15.0	8.5.0
1909	£210,000	181,250	1,812,500	2/-	2/-	....		Merlimau Rubber Estates, Ltd.	5/-	5/6
1910	£250,000	250,000	250,000	1	1	——		Mount Austin (J.) Rubber Estates, Ltd.	1.13.9	1.17.6
1903	£30,000	22,500	225,000	2/-	2/-	——	75% interim	Pataling Rubber Estates Synd. Ltd	2.13.9	2.16.0
1906	£85,000	85,000	850,000	2/-	2/-	——	12½% interim	Perak Rubber Plantations, Ltd	6/10½	7/9
1909	£60,000	41,150	15,000s*	1	1	——		Rembia Rubber Estates Ltd.	...	nom.
			35,000	1	15/-	——		" " " 6% Cum. Pref.	3/6	5/- p.
1904	£25,000	19,092	17,732u	1	1	——	50% for year ending 30-9-10	Sagga Rubber Company, Limited	9.15.0	10.5.0
			2,268	1	12/-					
1905	£100,000	100,000	71,378	1	1	....		Sapong Rubber and Tobacco Estates, Ltd.	1.5.0	1.7.6
			28,622l‡							
1907	£100,000	100,000	100,000	1	1	——	15% interim	Seafield Rubber Co., Ltd	6.0.0	6.10.0
1898	£30,000	30,000	300,000	2/-	2/-	3,000	225% interim	Selangor Rubber Co., Ltd	2.12.6	2.15.0
1909	£50,000	36,000	40,000	1	18/-	——		Sendayan (F. M. S.) Rubber Co., Ltd	1.6.3	1.10.0p.
1906	£65,000	65,000	65,000	1	1	——	10% interim	Shelford Rubber Estate, Ltd	3.5.0	3.15.0
1909	£150,000	78,500	14,000i‡	1	1	——		Sialang Rubber Estates, Ltd	15/-	20/- p.
			86,000	1	15/-					
1909	£120,000	100,000	100,000	1	1	——	12½% for year ending 31-6-10.	Singapore Para Rubber Estates, Ltd.	4/6	5/6
1906	£200,000	192,500	1,925,000	2/-	2/-	——	17½% for year ending 31-3-10	Straits Settlements (B.) Rub. Co., Ltd	6/9	7/3
1907	£60,000	50,000	50,000p‡	1	1	....		Sungei Choh Rub. Estate, Co. Ltd.	3.12.6	4.0.0
1906	£110,000	100,000	1,000,000	2/-	2/-	——	25% interim	Sungei Kapar Rubber Co., Ltd	12/-	13/-
1907	£70,000	60,500	60,500	1	1	——		Sungei Salak Rubber Co., Ltd	3.16.9	4.5.0
1904	£60,000	59,500	59,500	1	1	——	12½% interim	Sungei Way (Selangor) Rub. Co., Ltd	5.7.6	5.17.6
1908	£150,000	100,560	100,560	1	1	——		Tebrau (Johore) Rubber Co	2.13.9	3.0.0
1907	£200,000	200,000	200,000	1	1	——	5% interim	United Serdang (S.) R. Plantations, Ltd.	5.5.0	5.10.0
1908	£85,000	78,612	786,120	2/-	2/-	....	20% interim	United Sumatra Rubber Estates, Ltd.	7/4½	8/-
1904	£60,000	50,600	506,000	2/-	2/-	....	75% interim	Vallambrosa Rubber Co., Ltd.	1.13.6	1.16.0
								DOLLAR		
1909	$120,000	105,000	105,000w*	1	1	——		Alor Gajah Rubber Estate, Ltd	1.90	2.00
1909	$750,000	700,000	140,000	5	5	...		Ayer Panas Rubber Estates, Ltd	5.60	6.00
1905	$200,000	151,500	151,200	1	1	5,250	40% interim	Balgowie Rub. Estate, Ltd	10.25	10.50
1910	$500,000	500,000	50,000	10	10	——		Bukit Timah Rubber Estates, Ltd.	13.00	14.00
1910	$750,000	700,000	70,000	10	10	——		Changkat Serdang Estates, Ltd	7.25	7.50
1909	$300,000	300,000	300,000	1	1	....		Glenealy Plantations, Ltd	1.60	1.70
1910	$200,000	164,285	32,857m‡	5	5	....		Haytor Rubber States, Ltd	5.50	7.50
1910	$600,000	210,000	30,000	10	7	——		Henrietta Estates, Ltd.	—	2 dis.
1909	$250,000	200,000	20,000	10	10	——		Indragiri (S.) R. and Gutta P. Co., Ltd.	12.00	13.00
1910	$350,000	300,000	300,000o‡	1	1	....		Jimah Rubber Estates, Ltd	0.55	0.65
1910	$350,000	291,000	11,000	5	5	——		Kelemak Rubber Estate, Ltd.	3.00	4.00
			59,000	5	4	——		" " " part paid	3.00	2.00 dis.
1907	$300,000	170,000	20,000	10	8.50	....		Kombok Rubber Co., Ltd	15.00	p. nom.
1910	$1,000,000	1,000,000	500,000	2	2	——		Malakoff Rubber Co., Ltd.	2.25	2.40
1910	$1,250,000	1,250,000	250,000	5	5	——		New Singapore Rubber Co., Ltd.	6.00	6.25
1910	$700,000	[illegible]	600,090q‡	1	1	——		Nyalas Rubber Estates	0.40	0.50
1909	$400,000	[illegible]	80,000	5	5	——	5% interim	Pajam Limited	10.50	11.00
1909	$200,000	[illegible]	200,000	1	1	——		Pantai, Limited	1.20	1.30
1909	$500,000	[illegible]	45,000	10	10	——	17½% for year ending 31-8-10	Pegoh, Limited	30.00	30.50
1910	$450,000	295,000	45,000f‡	5	5	....		Port Dickson Rubber Co., Ltd	10.00	12.00
			35,000	5	2	....		" " " part paid	..	1.[illegible]0 p.
1910	$5,000,000	3,675,000	360,000	10	2	....		Pulau Bulang Rub. & Produce Co., Ltd.	1.75	1.85
			7,500	10	10	....		" " " "		...
1910	$200,000	150,000	50,000	1	1	....		Pulo Daat Plantations, Ltd.	0.75	1.00
1904	$100,000	100,000	50,000	2	2	20,000	100% interim	Sandycroft Rubber Co., Ltd	23.50	24.50
1910	$1,500,000	1,500,000	1,500,000	1	1	....		Sembawang Rubber Plantations, Ltd	0.50	0.60
1903	$450,000	417,300	208,650	2	2	——	25% interim	Singapore & Johore Rub. Co., Ltd	11.50	11.75
1909	$250,000	100,000	10,000	10	10	....		St. Helena Rubber Coy., Ltd	..	26.00
1910	$600,000	450,000	225,000n‡	2	2	....		Sungei Bagan Rubber Co., Ltd.	1.25	1.50
1909	$200,000	165,000	33,000	5	5	——		Telok Anson Rubber Estate, Ltd.	4.50	4.75
1910	$425,000	371,700	371,700r‡	1	1	....		Ul Pandan (Singapore) Rub. Estates Ltd.	0.45	0.55
1909	$1,000,000	737,500	737,500y*	1	1	....		United Singapore Rubber Estates, Ltd.	1.25	1.35
								GENERAL		
1903	£400,000	400,000	400,000	1	1	——		Singapore Electric Tramways, Co., Ltd.	3/3	4/3
1907	$1,500,000	1,065,150	25,000d*	10	10	——	10% for year ending 31/12/08	Eastern Smelting Co. Ltd	....	10.00 n.
			116,450	10	7	——	10% for year ending 31-12-08	" " " part paid	6.15	6.50
1898	$360,000	360,000	36,000	10	10	170,000	10% interim	Fraser & Neave, Ltd	28.00	29.00
1905	$2,400,000	2,400,000	18,000	100	----	75,000	2½% for year ending 31-10-08	Howarth Erskine, Ltd	----	54.00
			6,000	100	----	....	7% for year ending 31-10-08	" " 7% Pref	----	91.00
1896	$1,000,000	1,000,000	6,000	100	100	40,600	12% for year ending 31-12-09	Katz Brothers, Ltd. *Deferred*	----	125.00
			4,000	100	100	——	8% " " " " 09	" " 8% Cum. Pref	....	nom.
1901	$34,000	34,000	3,400	10	10	....	20% for year ending 31-10-09	Maynard & Co., Ltd	23.00	24.00
1899	$875,000	875,000	6,000	100	100	175,000	5% for year ending 31/12/09	Riley, Hargreaves & Co., Ltd	80.00	85.00
			2,750	100	100		7% for year ending 31/12/09	" " " " 7% Pref	102.00	
1897	£3,500,000	3,500,000	2,500,000	1	1	1,120,000	22½% for 1909	Shell Transport and Trading Co., Ltd	4.6.0	4.10.0
			100,000	10	10			" " " " Pref.	11.5.0	12.0.0
1903	$600,000	250,000	25,000n	10	10	——	12½% for year ending 30-6-10	Singapore Cold Storage Co., Ltd	24.00	25.00
1891	$30,000	30,000	600	50	50	23,000	10% for year ending 31-7-09	Singapore Dispensary Ltd.	50.00	52.50
1884	$200,000	200,000	2,000	100	100	75,000	15% interim	Straits Ice Co., Ltd	....	165.00
1890	$1,000,000	623,000	4,980	100	100	760,000-1/7	5% interim	Straits Steam Ship Co., Ltd.	215.00	225.00
			2,500	100	50			" " " " " part paid	80.00	90.00p.
1887	$3,000,000	3,000,000	300,000	10	10	805,400½ 1,450,000	10% & 5% bon. for half yr. end 31/3/10	Straits Trading Co., Ltd	52.50	53.50
								DEBENTURES		
								Howarth Erskine, Ltd. 6% $600,000	...	par.
								Riley, Hargreaves & Co., Ltd. 6% 284,000	1½%	2½% p.
								Singapore Electric Tramways, Co., Ltd. 5% £350,000	....	....
								Singapore Municipal 5% 1,878,000	....	nom.
								" " 4½% of 1907 1,600,000	6%	7% p.
								" " 4½% of 1909 1,000,000	7%	8% p.
								" " 4% 602,900	....	7% dis.

a { 152,800 unissued; 43,949 6% debenture
e { 54,500 £1 Prefs issued; 45,500 £1 " unissued; 100,000 5/- Ord. "
f 6,250 unissued
k £40,000 6% Debentures 200,000 unissued
p 175,000 unissued "A" shares
q Sundry Reserves.
r "
u 5,000 issued £1 prem.
v 50,220 unissued
w 16,756 "
b* 221 7½% Debentures
d* 8,550 unissued
g* 25,000 unissued
l* £10,000 Convertible 6% Debentures issued 12,200 shares unissued
n* 20,000 unissued
y* 262,500 "
s* 10,000 "
i‡ 50,000 "
l‡ 6% Deb. Stock Convble.
m‡ 7,143 unissued
n‡ 75,000 unissued.
o‡ 67,750 "
p‡ 10,000 "
q‡ 100,000 "
r‡ 53,330 "
s‡ 50,000 "

YOKOHAMA SHARE QUOTATIONS

Courtesy A. C. Hutton Potts, Share and General Broker, Yokohama, January 26, 1911.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
Brett & Co., Ltd.	-Y- 28,000	2,800	-Y- 10	-Y- 10	31-12-09	12½%	for 1 year	15 Sales
Club Hotel, Ltd.	185,000	1,850	100	100	31-3-10	6%	for 1 year	70 Sales
Grand Hotel, Ltd.	500,000	5,000	100	100	31-6-10	5%	for ½ year	90 Sales.
Helm Bros., Ltd.	186,000	3,720	50	50	31-12-10	17½%	for 1 year	95 Sales.
Langfeldt & Co., Ltd.	100,000	2,000	50	50	30-6-09	6%	for ½ year	60 Sellers.
C. Nickel & Co., Ltd. A	500,000	20,000	25	25	31-10-10	14%	for 1 year	65 Sellers.
Thwaites, Limited.	100,000	2,000	50	50	First Year	—	—	55 Sales.
Yokohama Engine and Iron Works B	500,000	10,000	50	50	31-5-09	—	for 1 year	35 Sales.
Oriental Hotel, Ltd., Ordinary }	250,000	3,000	50	50	31-8-07	12%	for 1 year	50 Sales
Oriental Hotel, Ltd., Preference }		2,000	50	50		8%	for 1 year	52:50 Sales
The Union Estate and Investment Co., Ltd. C	1,000,000	10,000	100	100	30-9-09	7%	for 1 year	100 Nominal.
The Clifford Wilkinson Tansan Mineral Water Co., Ltd. D	500,000	5,000	100	100	31-12-09	7%	for 1 year	100 Buyers.

A 285,000 unissued.
C 475,000 unissued.

B 390,000 issued.
D 375,800 issued.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Yokohama United Club	230,000.00	100.00	6%	30 June and 31 Dec.	102 Nominal.
Oriental Hotel, Limited	350,000.00	100.00	8%	1 April and 1 Oct.	103 Sales.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	100 Sales.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	LAST DIVIDEND.	DIVIDEND PAYABLE.	17TH JANUARY, 1911.	24TH JANUARY, 1911.
Bonds & Debentures.						
Exchequer Bonds 3rd issue	-Y-100	-Y-100	5%	March and Sept.	-Y-101.20	101.30
Railway Bonds (Ko-Gobu)	100	100	5%	June and Dec.	,, 99.70	99.75
4% Imperial Loan Bonds (1st issue)	100	100	4%	June and Dec.	,, 93.45	93.50
4% Imperial Loan Bonds (2nd issue)	100	100	4%	March and Sept.	,, 94.20	94 30
Special 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 99.70	99.70
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 101.50	101.50
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 103.80	103.80
Railways & Electric Trams.						
Tokyo Railway Company, Limited	50	50	7%	June and Dec.	,, 72.95	72 95
Yokohama Electric Tramway Company, Limited	50	50	5%	July and Jan.	,, 54.00	53.50
Keihin Electric Tramway Company, Limited	50	50	6%	June and Dec.	,, 43.05	42.60
Cotton Spinnings.						
Kanegafuchi Cotton Spinning Company, Limited	50	50	12%	July and Jan.	,, 105.95	106.00
Fuji Gassed-yarn Company, Limited	50	50	6%	June and Dec.	,, 94.40	91.70
Tokyo Cotton Spinning Company, Limited	50	50	7%	July and Jan.	,, 43.60	43.15
Imperial Hemp Weaving Company, Limited	50	50	10%	July and Jan.	,, 69.50	70.00
Nisshin Boseki Kabushiki Kaisha	50	17½	Nil	June and Dec.	,, 12.20	12.15
Sugar & Beer Cos.						
Dai-nippon Sugar Refinery Company, Limited	50	50	Nil	May and Nov.	,, 45.00	46.00
Ensuiko Sugar Refinery Company, Limited	50	20	20%	June and Dec.	,, 48.60	49.70
Dai-nippon Beer Company, Limited	50	50	12%	July and Jan.	,, 80.30	80.80
Kirin Brewery Company, Limited	50	50	7%	July and Jan.	,, 53.00	53.00
Docks & Steamships.						
Yokohama Dock Company, Limited	50	33	12%	June and Dec.	,, 59.00	59.50
Nippon Yusen Kaisha	50	50	10%	May and Nov.	,, 96 94	97.40
Hokkaido Tanko S. S. Company, Limited	50	50	Nil	July and Jan.	,, 28.60	27.85
Miscellaneous.						
Tokyo Electric Light Company, Limited	50	50	12%	June and Dec.	,, 82.75	82.90
Tokyo Gas Company, Limited	50	50	13%	July and Jan.	,, 82.00 ex New	81.35
Yokohama Union Electric Light Company, Limited	50	50	13%	June and Dec.	,, 106.00	106.50
Fuji Paper Mills	50	50	6%	June and Dec.	,, 32. 0	32.00
Hoden Petroleum Company, Limited	50	50	12%	April and Oct.	,, 63.55	63.35
Tokyo Rope Manufacturing Company, Limited	50	50	16%	June and Dec.	,, 106.00	106.00
Tokyo Stock Exchange Company	50	50	15.04%	June and Dec.	,, 174.30	175.80

BANGKOK SHARE QUOTATIONS

(Courtesy Messrs. Edwards & Co., Bangkok, Siam.) January 26, 1911.

NAME.	BUYERS.	SELLERS.	LAST SALES.	ESTABLISHED.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE	AMOUNT PAID UP	RESERVE FUND	LAST DIVIDEND
Siam Electricity Co., Ltd.	Tcs. 300	Tcs. 325	Tcs. 325	1901	£ 300 000	30,000	£ 10—	£ 300.000	Tcs. 491 338	12% Tcs. 4 bon.
Paknam Railway Co., Ltd	,, 200	,, —	,, 220	1893	Tcs. 400,000	5,000	Tcs. 80	Tcs. 400,000	,, [illegible]7.566	14%
Siam Tramway Co., Ltd	,, —	,, —	,, 108	1905	,, 1,450.000	6250 Shares, 7250 Deb., 1000 P. Shares	,, 100	,, 2,230.000	,, 1,875	—
Meklong Railway Co., Ltd	,, 90	,, 100	,, 90	1907	,, 2,230,000	22.300	,, 100	,, 223,000	,, 28 000	5%
Bangkok Manufact Co., Ltd	,, —	,, —	,, 132	1898	,, 400 000	4 000	,, 100	,, 400 000	,, 60,000	7% per for 6 months
Bangkok Dock Co., Ltd	,, —	,, 135	,, 135	1865	,, 1,000,000	10.000	,, 100	,, 95[illegible]000	,, 220 000	
Siam Steam Packet Co.	,, 80	,, 909	,, 90	1898	,, 190 000	3.800	,, 50	,, 190 000	,, 34.000	5%
Siam Commercial Bank	,, 1,000	,, 1 500	,, 1,000	1906	,, 3,000 000	3 000	,, 1,000	,, 3.000 000	,, 338,850	4% for 6 mos.
Menam Motor Boat Co.	,, 75	,, 90	,, 90	1905	,, 200 000	2,000	,, 100	,, 200,000	—	none
Transport Co., Motor	,, —	,, 75	,, 100	1906	,, 200 000	2,000	,, 100	,, 200,000	—	—
Jenderata Rubber Co *	,, —	,, 325— Ticals	,, 325 (for six calls)	1906	£ 40,000	4.000	£ 10	£ 7 -paid	—	—
Bagan Rubber Co.	,, —	,, 100	,, 100	1907	Tcs. 300 000	3 000	Tcs 100	Tcs. 40 per share	—	—
Siam Steam Navigation Co., Ltd	,, 300	,, 325	,, —	1909	,, 2 000 000	10.000	,, 200	—	,, 10,000	—
Siam Stone Works, Ltd.	,, —	,, —	100	1909	,, 350,000	3 500	,, 100	,, 350,000	—	6% half year
Kombok Rubber Co	,, 25	,, 35	32	1906	$ 300,000	30,000	$ 100	$7. per Share	—	—

PHILIPPINE SHARE REPORT

COURTESY B. A. GREEN, GENERAL SHARE, BOND AND INVESTMENT BROKER —*Manila, P. I., February 10, 1911.*

NAME	CLOSING QUOT'N	WHEN INCORPORATED	AUTHORIZED CAPITAL	ISSUE VALUE OF SHARES	NUMBER OF SHARES	NUMBER OF SHARES SUBSCRIBED	PAID UP	RESERVE FUND	WORKING ACCOUNT	DATE	LAST DIVIDEND
American Drug Store	…	1908	₱ 100,000	₱1,000	100	51	₱1,000	₱5,000	₱ 50,000	June 30, 1910.	…
Antamok Valley Mining Co	₱0.40	1909	500,000	1	500,000	320,000	1	…	…	…	First year
Banco Español Filipino	₱255.	1851	3,000,000	200	15,000	15,000	200	408,715	…	July 1, 1910.	10% for 1910
Bayhay Valley Oil Co	100.	1909	100,000	100	1,000	…	100	…	…	…	First year
Benguet Commercial Co	85.	1908	200,000	100	2,000	736	100	…	…	…	8% for 1906
Benguet Consolidated Mining Co	0.50	1903	2,000,000	2	1,000,000	495,000	2	…	…	…	…
Bua Mining Co.											
Common	90.	1905	750,000	100	7,000	3,366	100	…	…	…	…
Preferred	140.			100	500	500	100	…	…	…	…
Cadwallader-Gibson Lumber Co	…	1908	1,000,000	100	10,000	8,650	100	…	…	…	…
Camote-Clayton Mining Co	…	1909	400,000	10	40,000	26,000	10	…	…	…	First year
Compania Maritima	65.	1894	510,000	100	5,100	5,100	100	…	…	…	20% for 1902
East Batan Coal Mining Co	33.	1909	3,000,000	50	60,000	40,000	50	…	…	…	First year
El Varadero de Manila	80.	1885	450,000	100	4,500	4,500	100	238,955	134,715	Aug. 31, 1910	3½% interim 1910
Electrical Supply Co	…	1909	100,000	100	1,000	280	72	…	…	…	First year
Export & Import Lumber Co	…	1908	200,000	200	1,000	1,000	200	…	…	…	…
Escolta Press Inc	100.	1907	50,000	100	500	320	100	…	…	…	12% for 1909
Fabrica de Hielo de Manila	58.	1894	350,000	50	7,000	7,000	50	…	…	…	14% for 1910
Germinal Cigar Factory	525.	1900	1,500,000	500	3,000	3,000	500	…	…	…	12% for 1909
H. E. Heacock & Co	…	1909	100,000	100	1,000	800	100	…	…	…	First Year
Headwaters Mining Co	10.	1908	600,000	10	60,000	59,800	10	…	…	…	…
Insular Lumber Co	140.	1907	2,000,000	200	10,000	9,000	200	…	…	…	…
Lepanto Mining Co	…	1906	1,000,000	100	10,000	8,000	100	…	…	…	…
Juan Seiboth Co	…	1908	150,000	20	7,500	500	20	…	…	…	…
La Concha Button Factory	90.	1905	75,000	100	750	530	100	…	…	…	15% for 1909
Los Banos Improvement Co	150.	1908	100,000	200	500	500	200	…	…	…	16% for 1908
Lambert, Springer Co	…	1908	200,000	1,000	200	80	1,000	…	…	…	…
Luzon Stevedoring Co	25.	1909	250,000	25	10,000	4,200	25	…	…	…	…
Luzon Sugar Refining Co	18.	1882	700,000	100	7,000	7,000	100	…	…	…	3% for 1907
Manila Electric Ry. & Light Co	130.	1903	12,000,000	200	60,000	…	200	…	…	…	4% for 1909
Manila Hotel Co	100.	1909	400,000	100	4,000	3,500	100	…	…	…	Under Construction
Mindanao Herald Publishing Co	…	1907	15,000	100	150	75	100	…	…	…	½% for 1908
Muyot Mining Co.	3.30	1909	500,000	10	50,000	…	10	…	…	…	First Year
Paracale Gold Dredging Co	15.	1907	£10,000	£1	10,000	10,000	£1	…	…	…	£1 for 1908–9
Paracale Ext. Gold Dredging Co	10.	1909	₱450,000	₱10	45,000	…	₱10	…	…	…	First Year
Philippine Publishing Co	120.	1907	600,000	200	3,000	2,187	200	…	…	…	10% for 1910
Philippine Co., Ltd	5.	1904	750,000	10	75,000	75,000	10	…	…	…	…
Philippine Gold Dredging Co	8.	1907	200,000	10	20,000	20,000	10	…	…	…	…
Philippine Exploration Co	…	1908	2,000,000	10	200,000	120,000	10	…	…	…	…
Port Banga Lumber Co	…	1908	100,000	100	1,000	934	100	…	40,000	Oct 1, 1910.	…
Rosenstock Publishing Co	…	1908	75,000	10	7,500	6,000	10	…	…	…	…
San Nicolas Iron Works	100.	1901	300,000	500	600	600	500	…	…	…	15% for 1903
San Mauricio Gold Mining Co	…	1908	4,000,000	200	20,000	20,000	200	…	…	…	…
Sanitary Steam Laundry	20.	1908	100,000	20	5,000	3,900	20	…	…	…	5% for 1910
Tarlac Railway Co	40.	1906	150,000	100	1,500	1,500	100	…	…	…	…
Tumbaga Mining Co	0.35	1910	2,000,000	2	1,000,000	772,000	2	…	…	…	Reorganized 1910
Union Hemp Machine Co	…	1909	50,000	10	5,000	2,600	10	…	…	…	First Year
Walter E. Olsen Co	100.	1909	500,000	100	5,000	2,033	100	…	…	…	First Year
Zamboanga Cold Storage Co	125.	1903	40,000	100	400	200	100	…	…	…	20% for 1909

PHILIPPINE BONDS

	DATED	AUTHORIZED	ISSUED	OUTSTANDING	PAR VALUE	RATE OF INT.	WHEN PAYABLE	LAST QUOTATION
Philippine Friar Land Bonds	Feb. 1st, 1904	$7,000,000	$7,000,000	$7,000,000	$ 100	4%	Feb. 1, 1914	101½
Public Works and Permanent Improvement Bonds	March 1, 1905	$5,000,000	$2,500,000	$2,500,000	$ 100	4%	March 1 1915	101½
Do.	Feb. 1, 1906		$1,000,000	$1,000,000	$ 100	4%	Feb. 1, 1916	101½
Manila Sewer and Water Works Improvement Bonds	June 1, 1905	$4,000,000	$1,000,000	$1,000,000	$ 100	4%	June 1, 1915	101½
Do.	Jan. 2, 1907		$2,000,000	$2,000,000	$ 100	4%	Jan. 2, 1917	101½
*Philippine Railway First Mortgage Four per cent Thirty Year Sinking Fund Gold Bonds	July 1, 1907	$15,000,000	$5,736,000	$5,736,000	$1000	4%	July 1, 1937	95
B. P. O. Elks. First Mortgage 7% Five-Fifteen Year Sinking Fund Gold Bonds	July 1, 1908	$75,000	$45,000	$45,000	$ 50	7	July 1, 1923	50½

*Payment of interest guaranteed until maturity or redemption by the Philippine Government

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Alhambra Cigar & Cigarette Factory	42
Allis-Chalmers Co.	8
American Bank Note Co.	26
American Asiatic S. S. Co.	31
American Locomotive Co.	2[illegible]
American Bridge Co	24-25
American Manchurian S. S. Co.	5
American Steel and Wire Co.	67
American Tool Works	4
American Trading Co	68
Anderson & Co., Wm. H	49
Anderson, Meyer & Co	8[illegible]
Arnhold Karberg & Co	28
Astor House Hotel Co.	56
Baldwin Locomotive Works	22-40
Banco Español Filipino	Cover
Bell, David W	27
Bohler Bros & Co.	55
British American Tobacco Co., Ltd.	4[illegible]
Cadwallader-Gibson Lumber Co.	81
Chee Hsin Cement Co. Ltd	42
China Import Export Lumber Co.	45
China Merchants Steam Nav. Co.	46
China Mutual Life Insurance Co.	51
China and Manila S. S. Co	81
Chinese Eng. & Mining Co	Cover
Cia. General de Tabacos Filipinas.	41
Cia Trasatlantica	44
Claflin Co., The H. B.	42
Clarke, M A	52
Commercial Press, Ltd	81
Cook's Sons, Adam	68
Defiance Machine Works	29
Detroit Engine Works	87
Deutsch-Asiatische Bank.	1
Dollar, Co., The Robert	47
Earnshaw, M & Co., Inc	7
Easterbook Allcond & Co	55
Eastern Engineering Co	6
Export and Import Lumber Co.	81
Fearon, Daniel & Co.	18-38
Fairbanks Morse & Co	4
Ferro Machine & Foundry Co.	87
Fressel, C. & Co	82
Fushun Coal	8
General Electric Co.	29
Germinal Cigar Factory	43
Gordon & Co	4
Gray Motor Co.	87
Green Island Cement Co., Ltd.	48
Han-yeh-Ping Iron & Coal Co. Ltd.	71
Hanyang Iron & Steel Works	71
Harvey, Stuart S.	58
Henschel & Sohn	68
Herbrand & Co., P	40
Hongkong Rope Mfg. Co., Ltd	31
Hongkong & Shanghai Banking Corp	Cover
Hongkong & Whampoa Dock Co., Ltd	10
Honolulu Iron Works Co.	19
Hupeh Cement Co	50
Imperial Railways of China.	57-58-59-60-61
International Banking Corp.	Cover
International Steam Pump Co.	69
Jardine, Matheson & Co	33
Johnson-Pickett Rope Co	10
Kawasaki Dockyard Co. Ltd.	7
Kiangnan Dock & Engineering Works	8
La Prueba	44
Lima Locomotive Works.	23
Lodge & Shipley Machine Tool Co.	85
Malthoid.	72
Melchers & Co	15
Middleton & Co. Ltd	20
Michigan Steel Boat Co	64
Mitsu Bishi Dockyard & Eng. Works	6
Mitsui Bussan Kaisha	5
Morse & Son, A J	334
Murray, Wilbur H. Mfg Co.	64
New Engineering and Shipbuilding Works Ltd	11
New York Engineering Co.	36
Nicholson, C S	[illegible]
Nippon Yusen Kaisha	47
North British Locomotive Co. Ltd.	23
Olsen & Co., Walter E.	Cover
Pacific Mail S. S. Co	44
Pacific Tank and Pipe Co.	72
Paraffine Paint Co	72
Philippine Islands	2
Port Banga Lumber Co	32
Priestman Brothers, Ltd.	51
Racine, Ackermann & Co.	49
Remington Typewriter Co	41
Rose, Downs & Thompson, Ltd	64
Russo Asiatic Bank.	1
Rendrock Powder Co.	32
San Miguel Brewery	4
Santa Mesa Rope Works.	18
Schuchardt & Schütte, Berlin	41
Shanghai Dock & Eng. Co., Ltd	12
Shanghai Gas Co., Ltd	36
Shanghai Nanking Railway	15
Shanghai Machine Co.	34
Shewan, Tomes & Co.	30
Siemens China Electrical Engineering Co	17
Southern Pacific Co	33
South Manchuria Railway Mining Dept.	3
South Manchuria Railway	14
Standard Oil Co of New York	65 66-67
Stevenson & Co., Ltd., W. F.	10
Strong, Frank L.	58
Superior Wrench Co.	87
Swift & Co.	40
Taikoo Dockyard and Engineering Company of Hongkong, Ltd.	9
Thompson F H	68
Toyo Kisen Kaisha	37
Truscott Boat Mfg. Co	50
Trussed Concrete Steel Co.	41
Tsingtauer Werft	54
United States Steel Products Export Co	21-25-70
Vander Loo & Co F. A.	89
Vulcan Iron Works	64
Vulcan Iron Works Ltd	18
Wen Ming Press	26
White & Co (Inc.) J. G	64
Western Electric Co	19
Westinghouse Brake Co., Ltd	55
Western Valleys Anthracite Co.	72
Woosung Car Shops	18
W T Henley's Telegraph Work Co., Ltd	18
Ynchausti & Co	35
Yokohama Specie Bank	1
Young, C. G	333
Zimmerman Steel Co.	63

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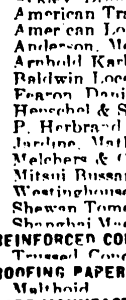

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GENERAL FOREIGN BUSINESS TRANSACTED
COMMERCIAL AND TRAVELLERS' LETTERS OF CREDIT ISSUED
BILLS OF EXCHANGE AND CABLE TRANSFERS BOUGHT & SOLD

Supplement to
THE FAR EASTERN REVIEW
March, Nineteen Hundred and Eleven

JAMES A. FARRELL,
The New President of the United States Steel Corporation

THE FAR EASTERN REVIEW

COMMERCE ⊛ ENGINEERING ⊛ FINANCE

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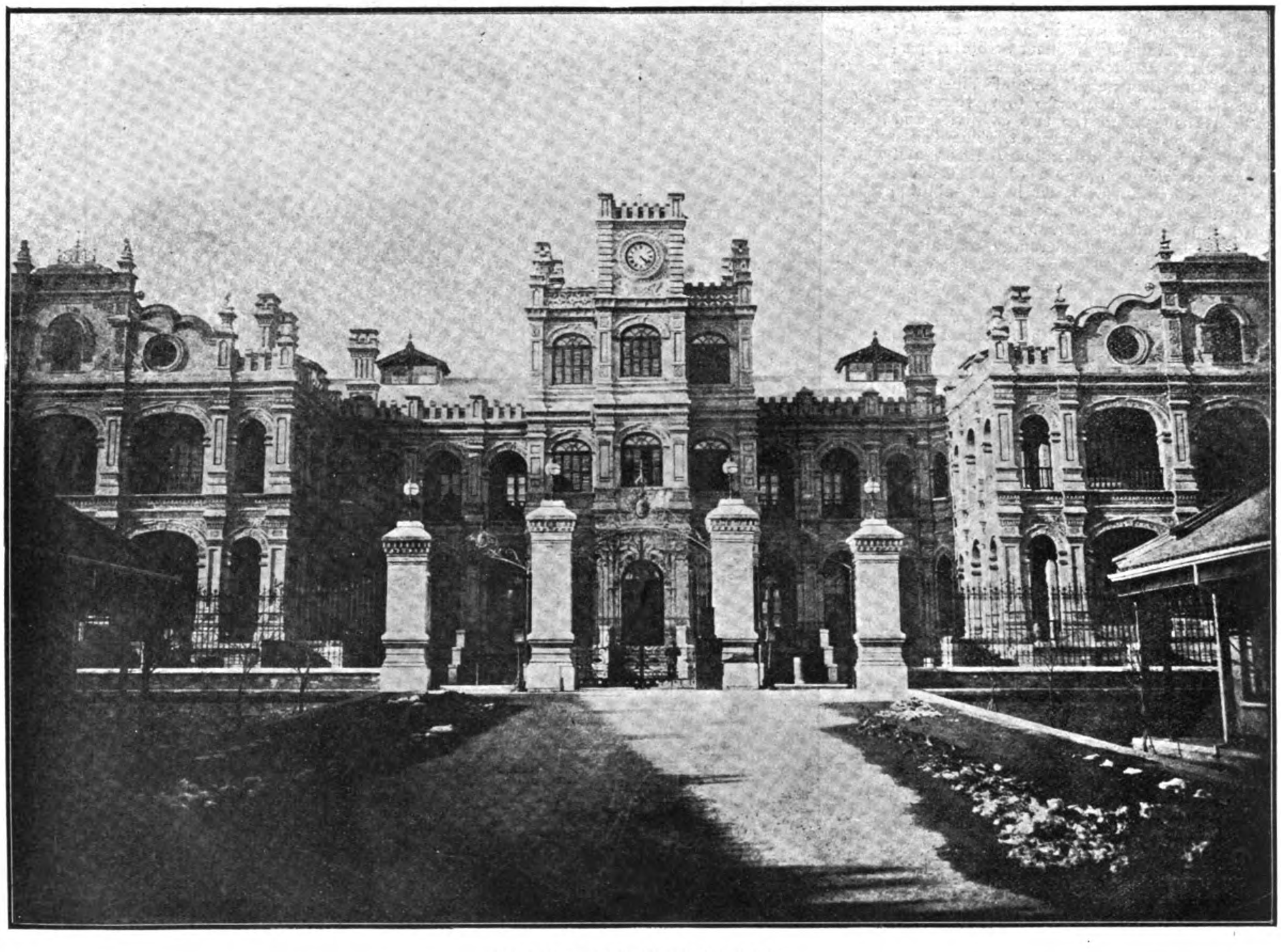
THE CHINESE ARMY

A reorganization of the various Boards at Peking into a responsible cabinet to direct the affairs of the nation is due to take place in the near future, and as a preliminary step an Imperial Edict of December 4th ulto. abolished the old Board of Army affairs and created the new ministries of War and Navy Both services were formerly under the direction of the Army Board, but the new scheme makes the Navy arm a distinct organization under the Ministry of the Regent's brother, H. I. H. Prince Tsai Hsun, and the army under the direction of Lt. Gen. Yin-Chang, the best equipped soldier in the Empire to carry through the arduous scheme of reorganizing and building up the new forces of the Empire. The naval development depends entirely on the supply of funds to carry it through, and as the provincial authorities have not shown any great alacrity in complying with the Imperial demands and appeals for cash, its development will be slow. With the army, however, greater progress is being made and, at the present rate of advance, the program entered into a few years ago will be completed within the specified time. The new Minister of War has entered upon his duties with great zeal, weeding out the incompetents and drones and striving hard to achieve results against the open opposition and passive resistance of the old element displaced from rank and power. As the success of the new scheme will depend in a large measure on the skill and ability of Gen. Yin-Chang, a brief resumé of his career will enable the leader to form a better conception of this leader of New China.



THE WAR DEPARTMENT, PEKING

Graduating from the Peking University with high honors, Yin-Chang was sent to Germany to finish his general education and receive military instruction, after which he went to Vienna and completed five years of actual service as an officer of an Austrian infantry regiment, returning to China, a full fledged European military official. He was then appointed to the old Imperial Guards at Peking which

he reorganized and brought up to a much higher standard. Later, when the Peiyang Military School was established at Tientsin by Viceroy Li Hung-Chang, Yin was made Superintendent. His work in this capacity was of a very high order, and many of the most promising generals and officials of the new army received their first instruction in modern military matters, from the one who is now their chief, and are devoted to him in consequence.

At the time of the Boxer Trouble, the school was attacked from both flanks by the rioters and the Allied Force. His coolness in making a safe retreat in an orderly manner elicited general admiration from the officials of the Allied Forces. After the conclusion of the Peace Negotiations, he went to Shantung, accepting the invitation of the then Governor of the Province, Yuan Shih Kai, to cooperate in restoring peace and order in that province. When Li Hung-Chang and Prince Ching were endeavoring to carry out the post bellum programme, he was also called in as adviser, and then shortly afterwards when Prince Ch'un was despatched to Germany as Envoy Extraordinary to apologize for the assassination of Baron Ketteler, General Yin Chang went as the Vice-Envoy. Through his knowledge of the German language and long residence in Berlin, he was largely instrumental in pacifying the anger of the German people and restoring amicable relations. His ability was recognized then and there by Prince Chun who is now the Regent.

When China was sending a new minister to Germany, Emperor William wrote a personal letter to Emperor Kuang Hsu, stating that the appointment of General Yin-Chang to the post will greatly help to increase the friendly relations with the two countries and which resulted in his appointment. The Kaiser received him with extraordinary favor and made a personal companion of the Chinese minister, taking him for walks in the suburbs, and inviting him to all banquets. When his term of appointment expired, he was obliged to stay another year in Germany as China's representative through the Kaiser's special request.

On his return to Peking, he was appointed the Senior Vice-President of the Board of Army Affairs, but his relations with President Tieh Liang not being cordial, he was transferred to the post of Commander of the Kiang-Pei Army. But at the request of the Kaiser he was again sent to Germany as the Chinese Minister.

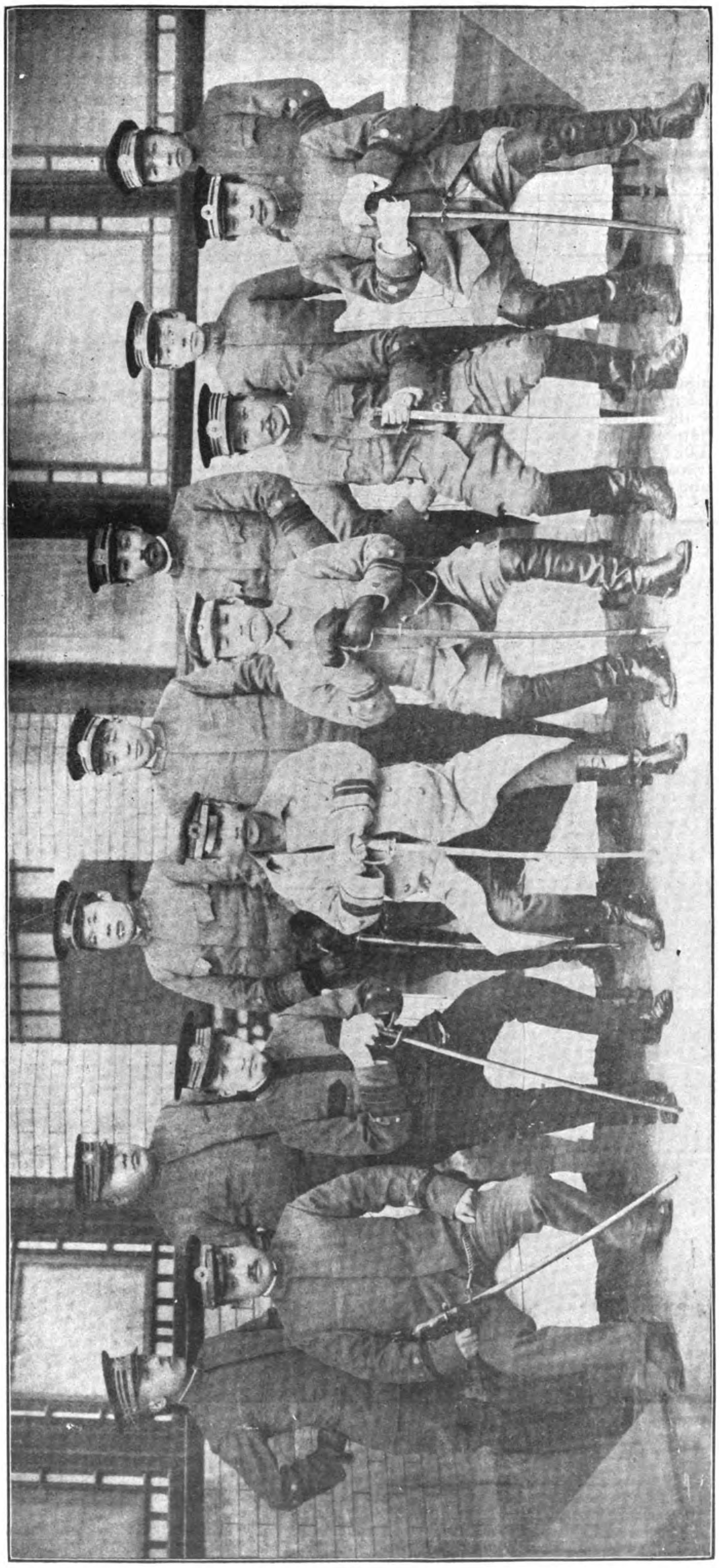
When H. E. Tieh Liang resigned his post, the Prince Regent sent a personal telegram, urging him to accept the position of the President of the War Board, which brought him home again to direct the affairs of the New Army.

He holds a high reputation for honesty, and lives simply and unostentatiously, and is devoted to his profession, preferring the title of General to that of Minister.

Such is the man who holds the full confidence of his Imperial master. Manchu to the core, his loyalty to the dynasty is undoubted, and he may be depended on to exert his utmost endeavours to build up a solid bulwark for its defense.

The Army scheme has been fully described in previous numbers of THE FAR EASTERN REVIEW. The Edict of April 16th, 1906, and the general program approved in August of the same year, called for the organization of 36 Divisions in ten years. Formerly the provincial governors had supreme control over the troops in their respective territories, but as this failed to insure effective operation in times of national need, the powers of the provincial authorities were taken away and concentrated in the Imperial War Board at Peking. The Viceroys and Governors however are still charged with the initial steps of financing, recruiting, drilling and organizing the new troops allotted to their respective provinces. After reaching a certain stage of perfection an inspection is held by an officer appointed from Peking, and if prescribed standards have been attained, the new troops are taken over by the Central Government and enrolled in the new Army. Otherwise a further period of training is necessary.

The period of military service embraces three years with the colors, three years in the



LT. COL. TCHANG, LT. COL. WENG, COL. WOUNG, COL. YI, COL. LU, COL. LÜ, COL. FONG

BRIG. GEN. HA HANG CHANG, COL. W. S. Y. TYNGE, LT. GEN. YIN CHANG, BRIG. GEN. WU LU-CHANG, COL. LU TAO-TSEN, BRIG. GEN. LIANG PI.

THE MINISTER OF WAR, GENERAL YIN-CHANG, AND HIS DEPARTMENTAL CHIEFS AND GENERAL STAFF OFFICIALS.

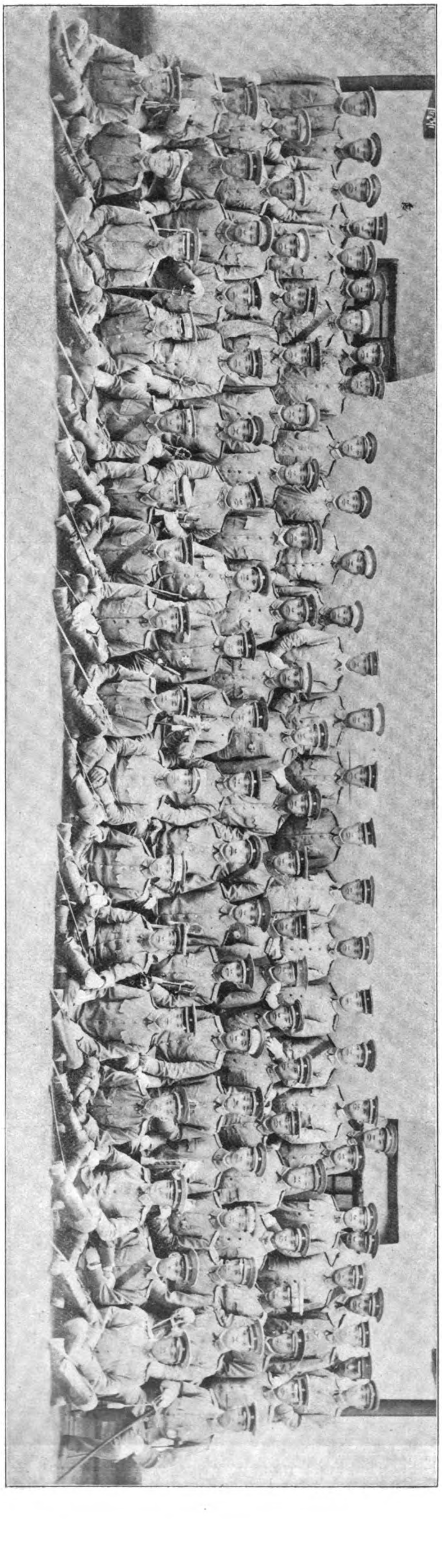


Photo taken at the Entrance Yard of their Temporary Quarters at the Imperial Hunting Park.

THE OFFICERS OF THE IMPERIAL GUARD CORPS, WITH THEIR COMMANDING GENERAL, H. I. H. PRINCE TSAI TAO (IN CENTER SECOND ROW, SEATED) AND GENERALS LIANG PI AND HA HANG CHANG (ON EITHER SIDE OF THE PRINCE)

first reserve and three years with the second reserve and after the tenth year the soldier is exempt from further service. The rapid progress made in the new scheme is sufficient evidence of China's determination to place herself in a position to insure the respect of other powers. In 1907, or one year after the promulgation of the Edict, eight divisions and one brigade had been fully organized and equipped, of which 4 divisions stationed near Peking were under the direct control of the War Board, 2 divisions under the Chihli Viceroy, and one division each under the Viceroys of the Liang Kiang, and Hu-Kwang, in addition to a Brigade of the Imperial Guards. By the end of 1909, there were 9 complete divisions and 11 in various stages of formation, and the end of 1910 showed 16 and one half complete divisions fully organized and equipped, exclusive of the Imperial Guard Brigade. The general program may be said to be about one half completed, leaving five years to organize the remaining divisions. Notwithstanding the many difficulties in securing the necessary funds for carrying it into effect, the Government now contemplates the increase of the army to 42 divisions and the Imperial Guards to two divisions.

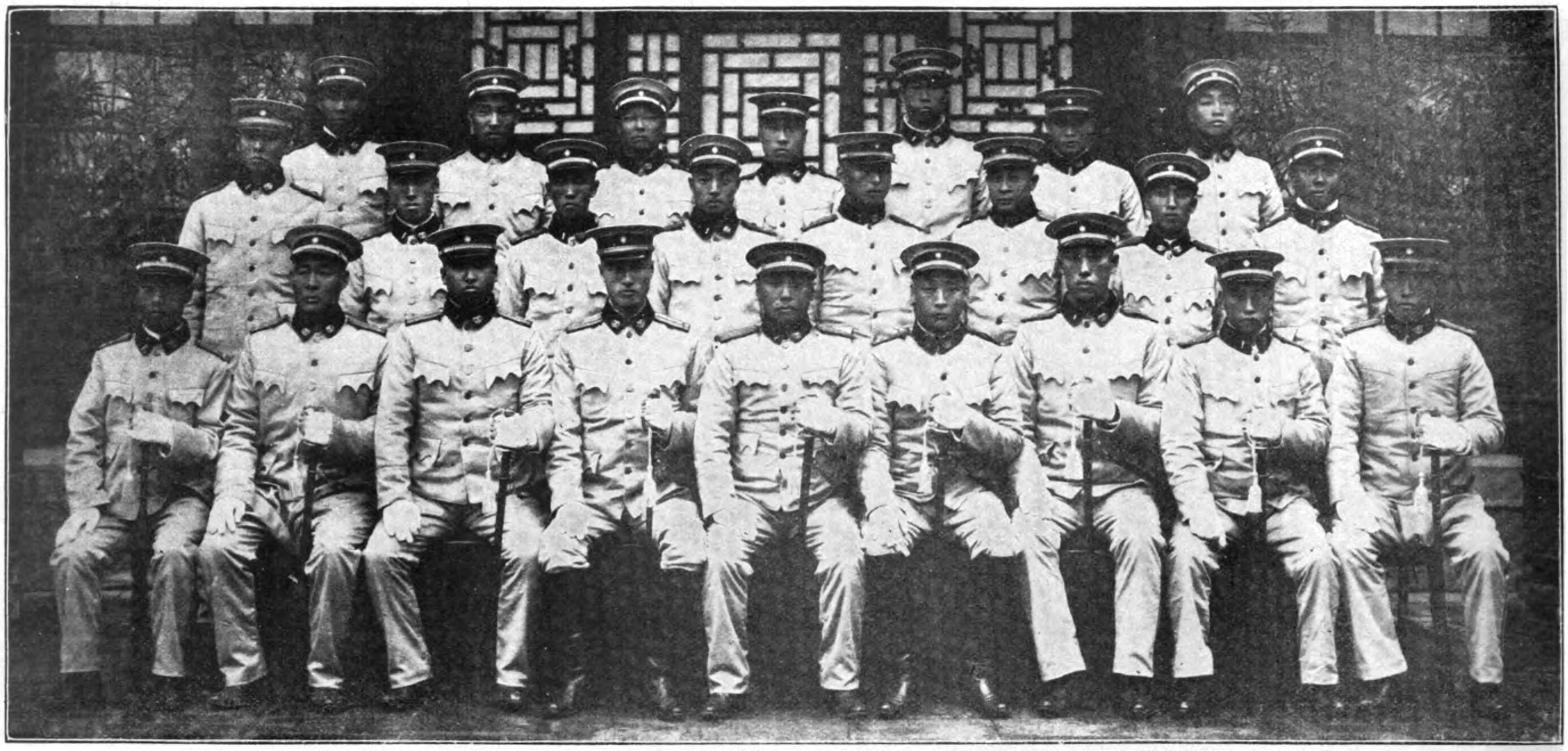
The question of finance is all important, but as there is no budget or means of securing reliable information, the actual expenses of the program are difficult to estimate. Chinese official estimates are proverbially untrustworthy and widely disproportionate in the various provinces. For example the organization expenses of a division in Kuei-Chow Province is estimated at Tls. 1,000,000 ($600,000 Gold) while a brigade for Hupei requires the same amount, and a brigade in Hunan needs Tls. 1,400,000. A division in Yunnan, requires Tls. 3,700,000 for organization expenses, or nearly 4 times as much as is necessary in the adjoining province of Kuei-chow.

The annual expenditure for the maintenance of a Brigade of the New Army in Hupei is said to be Tls. 500,000 and in Kirin Tls. 700,000. In Yunnan, Tls. 1,600,000 are expended for a division and in Chihli Tls. 1,500,000 for the same purpose.

In the year 1909, it is said that Tls. 42,000,000 were expended on the Army both old and new, and on this basis it is estimated that the annual Army expenditures will reach Tls. 85,000,000 in 1916.

THE IMPERIAL GUARDS

The crack Corps of the Army is the Imperial Guards, in which are enrolled as officers many of the younger sons of the Manchu nobility and aristocracy. Before its organization the Imperial Body Guard was made up of the four divisions stationed near Peking under command of the Chihli Viceroy, Yuan-Shih-Kai, with Chinese officials holding all the important commands. Even after these divisions were transferred to the control of the Board of War, the Manchu dynasty and nobility felt insecure and doubtful of the loyalty of the Corps under Chinese officials, and it was then determined to make the Imperial Guards a purely Manchu organization, recruited from the Banners with Manchu officials and the principal members of the reigning family in the high commands. The Emperor or the Regent is the titular Commander-in-chief of the Corps, with the active command delegated to his younger brother Prince Tsai-Tao. This prince is a blood brother of the Regent, that is from the same mother, and resembles him in many ways, having a bright, sunny disposition, affable, intelligent and keenly anxious to learn, and is consequently highly popular not only with Manchus and Chinese but with foreigners. His selection for this command was undoubtedly the best that could be made, as his popularity amongst the younger members of the Imperial Clan and the nobility has attracted many of them to a military life. H. H. Prince Yu-Lang, one of the most able princes of the Imperial Clan, is Comptroller of the Guard Corps. This prince is a typical Manchu, and since his entrance into political life only four years ago, has risen rapidly, and is now a member of the Grand Council, and the probable



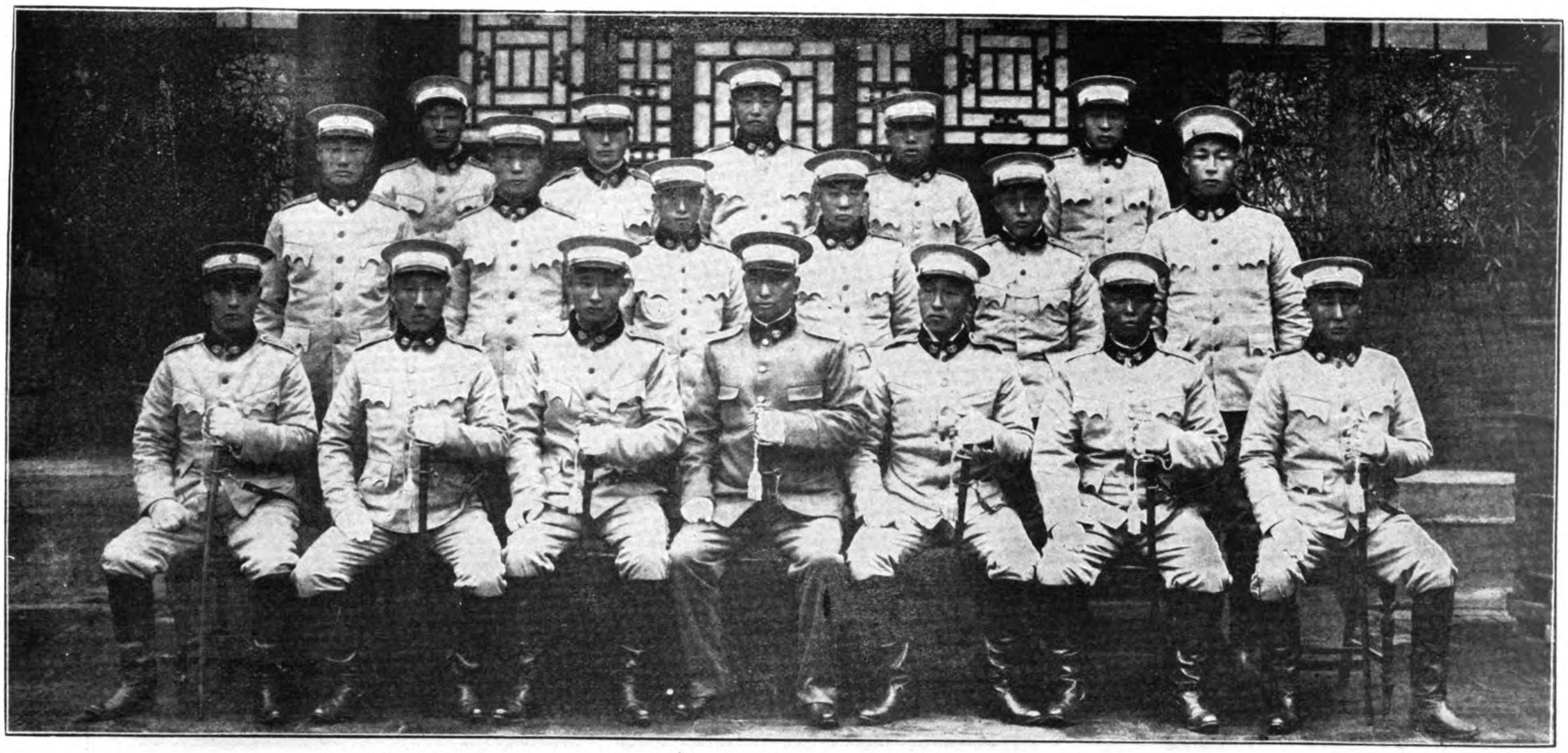
THE COLONEL AND OFFICERS OF THE FIRST INFANTRY REGIMENT OF THE IMPERIAL GUARD CORPS
Photograph taken in the Courtyard of their Mess at Peking.

successor to the mantle of Prince Ching (the "Premier" of China), when that venerable statesman finally retires. Prince Yu-Lang is still in his prime and destined to become one of the great leaders of the near future, sharing with Duke Tsai-tze, the present minister of finance, the distinction of being the only members of the Imperial Clan with the age and experience to assist the Regent in guiding the affairs of the nation. Notwithstanding the heavy drains on his time with affairs of state, Prince Yu Lang has developed a strong affection for the new Army and the Guard Corps, and whenever the occasion permits, lays aside the ceremonial robes of his princely rank, and appears in the trim and natty grey uniform of General of the Guards.

Prince Ching's youngest son, Prince Tsai-fu, has also selected a military career rather than the sedate life of the political office holder, and holds the rank of General and Training Commission of the Guards. Prince Pu-tung (brother of Prince Pu-lun), another of the bright young members of the Imperial Clan, is associate Chief Staff Officer of the Corps, equal in rank to Gen. Ha Han-Chang, the real military genius of the organization. In Gen Ha, China has an able assistant to Gen Yin-Chang. He graduated from the Peiyang Military School while the latter was Superintendent of that Institution, and afterwards went to Japan to complete his education, and on his return was selected to accompany Prince Tsai Tao in his mission last year to study foreign military systems. Following the lead of Japan, he has incorporated into the Chinese organization the best points of Japanese and foreign military science modified to meet peculiar national conditions. Gen. Liang-pi, the active Commander of the 1st Brigade of the Imperial Corps, is a Manchu, as his name of two characters indicates, promoted from the command of a brigade of the Peiyang Army to the more important post in the Guard Corps. He also received the rudimentary instruction in military matters at the Peiyang School when Yin Chang was Superintendent, and completed his course in Japan, and shares with Gen. Ha the reputation of being one of the best generals of the new army.

There are other able officers of the Guard Corps and on duty with the War Department and General Staff. Lt. Gen. Yin-Chang has

H. I. H. PRINCE TSAI TAO
IN THE UNIFORM OF LIEUT. GENERAL OF THE IMPERIAL GUARD CORPS



THE COLONEL AND OFFICERS OF THE FIRST CAVALRY REGIMENT OF THE IMPERIAL GUARD CORPS
Photograph taken in the Courtyard of their Mess at Peking.

H. I. H., PRINCE TSAI-TAO,
YOUNGER BROTHER OF THE PRINCE REGENT AND OF PRINCE TSAI HSUN,
IN COMMAND OF THE IMPERIAL GUARD CORPS.

ANOTHER PHOTOGRAPH OF H. I. H. PRINCE
TSAI TAO.

surrounded himself with the best of the foreign educated officials, and all staff appointments and the higher commands are filled by those having modern military training. The present administration is in striking contrast to the regime of the late president of the Army Board, H. E. Tieh-Liang, who owed his rapid rise in official life to the favor of friends at Court. He is a typical Manchu official of the old school, elevated to the highest honors, and filling various difficult posts without any reference to his ability to administer them properly. His lack of military training was offset by a knowledge of the classics a high position in the Manchu aristocracy and strong influence with the late Empress Dowager. In his favor it must be said he was endowed with certain powers of organization and executive ability, which carried him through his tenure of office with credit. As favoritism and influence predominated in his own rapid elevation to power, the same system naturally extended to the service under his direction, which was honeycombed with corruption and officered by incompetents. Persona favorites with no knowledge of modern military science were elevated to high commands, and the new army program was threatened with failure in its most vulnerable point through lack of efficient and trained

H. I. H. Prince TSAI FU,
SECOND SON OF CHINA'S VENERABLE STATESMAN PRINCE CHING, TRAINING COMMISSIONER OF THE IMPERIAL GUARD CORPS.

H. I. H. Prince YU LANG,
GRAND COUNCILLOR AND COMPTROLLER OF THE GENERAL STAFF.

H. H. Prince SU,
MINISTER OF THE INTERIOR, AND IN COMMAND OF THE PEKING GENDARMERIE. ONE OF THE EIGHT PRINCELY FAMILIES.

Major General HO,
COMMANDING A DIVISION OF THE NEW ARMY AT PEKING.

H. E. Major Gen. FENG SHAN.

MAJOR GENERAL HA HANG-CHANG

THE CHIEF OF THE GENERAL STAFF OF THE CHINESE ARMY. EDUCATED IN JAPAN

MAJOR GENERAL LIANG PI

COMMANDING THE 1ST COMPOSITE BRIGADE OF THE IMPERIAL GUARD CORPS. EDUCATED IN JAPAN

H. I. H. PRINCE PU LUN

PRESIDENT OF THE SENATE AND LT. GENERAL OF THE PLAIN BLUE MANCHU BANNER CORPS

UP-TO-DATE CHINA: CAPTAIN TUNG CHIN-PU,

OF THE IMPERIAL GUARDS, AIDE TO HIS BROTHER-IN-LAW, H. I. H. PRINCE TSAI-TAO

general officers. Before any advance towards even partial perfection was possible, the elimination of this dead wood became highly imperative. The old type official, steeped in the customs and traditions of centuries, and surrounded by cohorts of hangers on and friends awaiting his appointment to power, could not be relied on to remedy the situation. So the Regent turned to Gen. Yin-Chang as the right man for the post. Certain of incurring the deep resentment and lasting hatred of the old school incompetents, Gen. Yin-Chang hesitated before accepting the high honor, but at the earnest solicitation of his Imperial Master and the assurance of every support, he consented to take over the direction of the New Army. Secure in his position, he has cleansed the

H. E. TIEH LIANG,

FORMER PRESIDENT OF THE ARMY BOARD, NOW TARTAR GENERAL AT NANKING

MAJOR GENERAL FENG SHAN,

FORMERLY IN COMMAND OF A DIVISION OF THE PEI-YANG ARMY. A PARTISAN OF H. E. TIEH LIANG. ON THE LATTER'S REMOVAL, GEN. FENG SHAN WAS ORDERED AS TARTAR GENERAL TO WUCHANG.

Lieutenant General YIN-CHANG
MINISTER OF WAR.

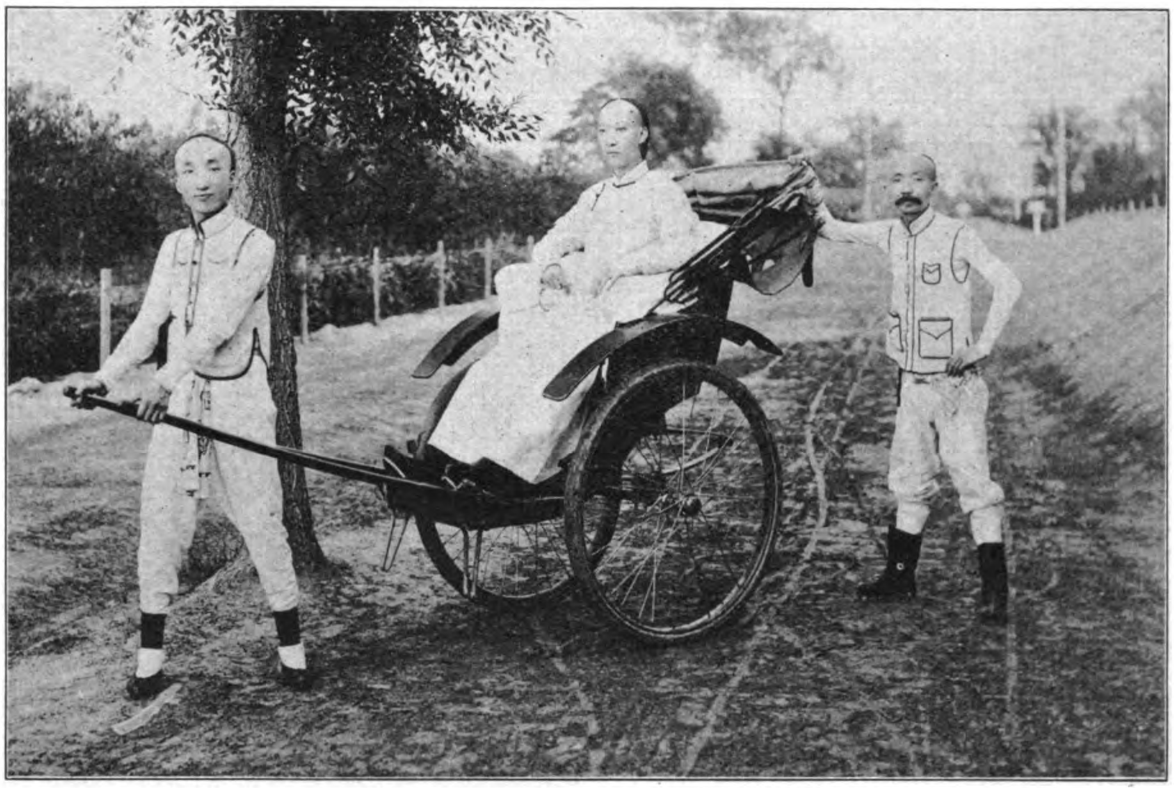
His Highness The Prince of CHUANG
ONE OF THE EIGHT PRINCELY FAMILIES

Augean stables, discharged hordes of drones, eliminated incompetents, and transferred the higher military officials of the old school to commands in the Banner Corps, or to the posts of Tartar Generals in the Provinces. Thus we find that the present War Department is presided over by a younger and more efficient, up-to-date personnel, all graduates of military colleges and imbued with the spirit of Yin-Chang to improve the conditions and morale of their service .

The photographs reproduced in these pages of the officials of the General Staff, and the 1st Cavalry and Infantry Regiments of the Guards, reveal a type hitherto unknown in China. In their neat grey workmanlike uniforms, devoid of ostentatious display, the Guards make a most favorable impression, and look the part.

Under Yin-Chang, the reorganization of the Army, has taken directions unsuspected by the old clique, and one by one their cherished

H. E. TUAN CHI-JUI
DEPUTY LT. GENERAL OF THE BORDERED RED CHINESE BANNER CORPS.

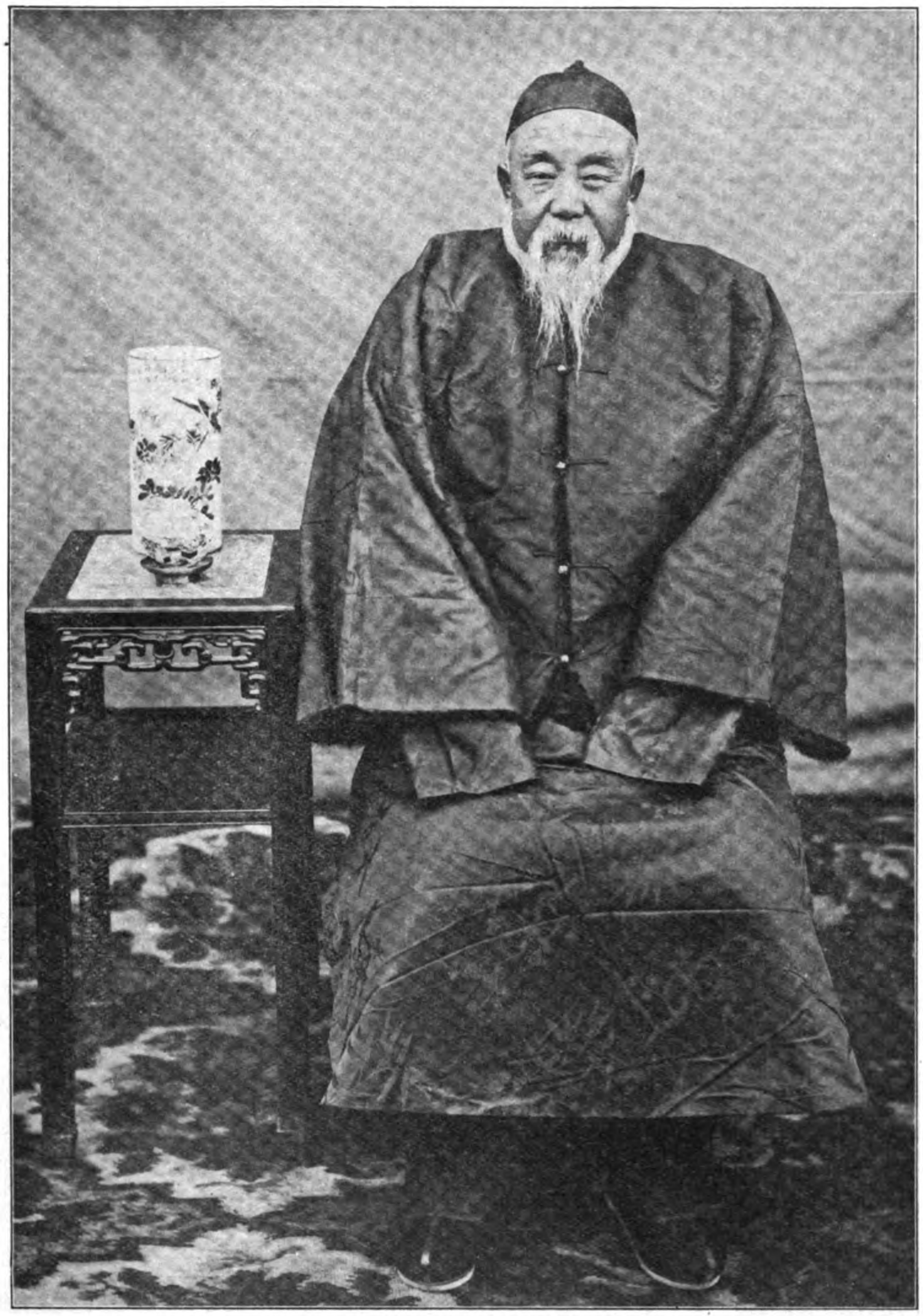


HIS HIGHNESS THE PRINCE OF SHUN CH'ENG
ONE OF THE EIGHT PRINCELY FAMILIES. FORMER CHAMBERLAIN OF THE COURT AND ACTUAL LIEUT. GENERAL OF THE BORDERED RED MANCHU BANNER CORPS.

MAJOR GENERAL LIANG PI
IN UNIFORM OF PEIYANG ARMY

H. H. PRINCE NA (NAYENTU)
DZASSAK OF THE KHALKA MONGOLS. GRAND CHAMBERLAIN OF THE COURT. LT. GEN. OF THE BORDERED YELLOW MANCHU BANNER CORPS.

H. E. TANG SHAO-YI
IN MILITARY UNIFORM, AS GENERAL OF THE MUKDEN FORCES, WHILE GOVERNOR OF THE PROVINCE OF FENGTIEN.



LIEUTENANT GENERAL CHIANG KUEI-TI,
COMMANDING THE DIVISIONS AT TUNGCHOW OUTSIDE OF PEKING

H. E. CHEN KUEI LUN,
VICEROY OF CHIHLI, THE METROPOLITAN PROVINCE, WHOSE ARMY WAS TAKEN OVER BY THE WAR DEPARTMENT AT PEKING

sinecures have been abolished, and the Commands concentrated with the General Staff. The two remaining divisions of the Chihli or Peiyang Army, under control of the Viceroy at Tientsin, and the independent command of the 4 divisions at Peking, with its separate staff and othe superfluous posts have been taken over by the new Minister, and some millions of taels saved the treasury. Gen. Feng-Shan who commanded the divisions at Peking, with a staff and retinue exceeding that of the Minister of War, has been transferred to the post of Tartar General at Wuchang, and his military career and ambitions nipped in the bud. There is a story going the rounds at Peking with some semblance of truth in it to account for these changes, and which opens up the inside history of palace intrigues and plots to displace the Regent, and elevate the present Empress Dowager to the supreme control of affairs, during the minority of the Emperor.

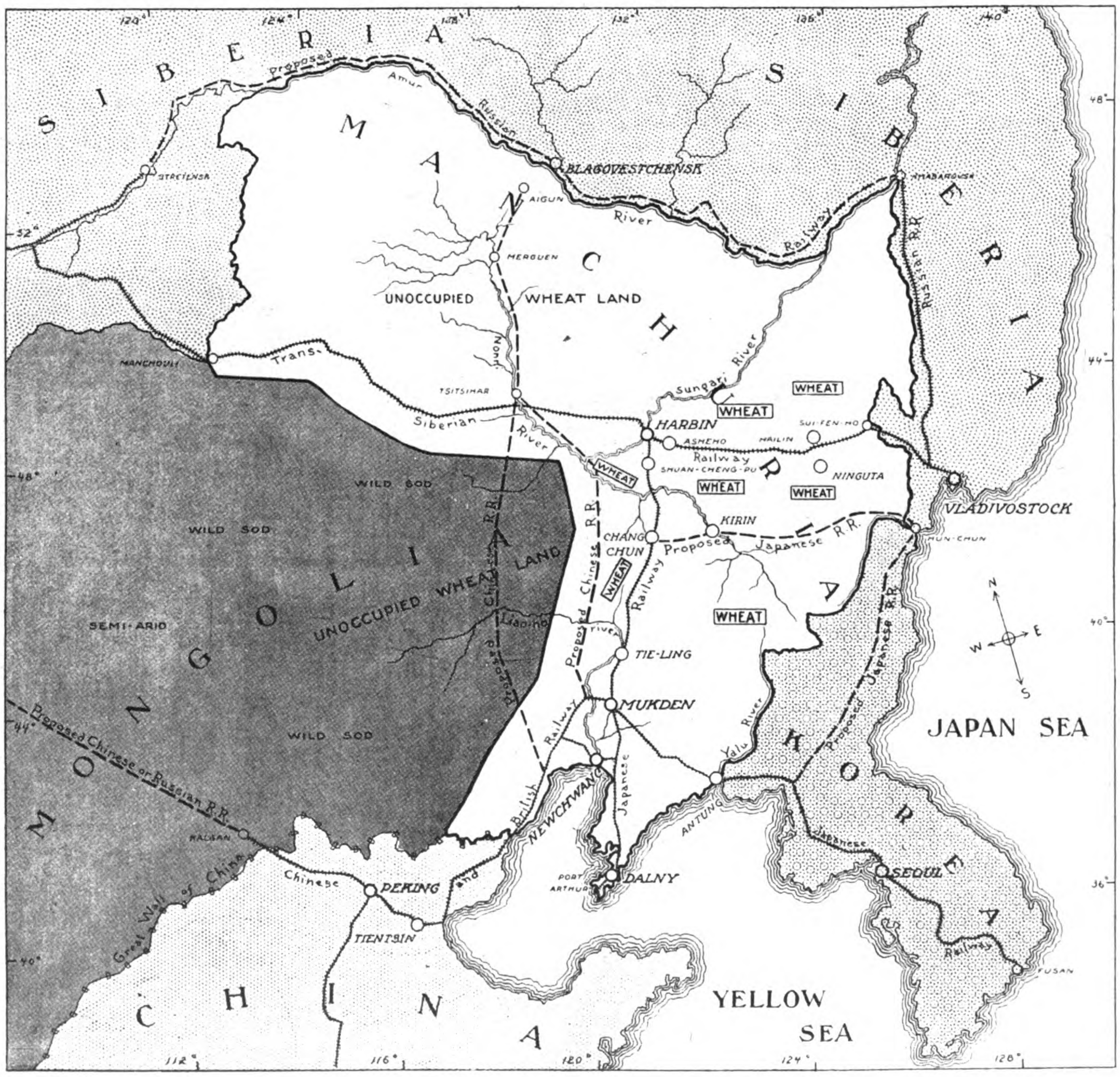
A clique of high Manchu officials headed by Tieh-Liang, the Minister of the Army, is credited with plotting to overthrow the Regent and support the Empress Dowager, and only the reluctance of the latter to be a party to the conspiracy prevented its consummation. So long as Tieh Liang held the position of War Minister, with his henchman, Gen. Feng-Shan, in command of the four divisions of the modern army near Peking, the Regent hesitated in removing him. Whatever may be the true facts, it is certain that at the first opportunity Tieh Liang was to all intents and purposes degraded and sent to Nanking as Tartar General and Feng Shan deprived of his important command and relegated to a similar position at Wuchang. The stories of these palace intrigues filter through the gates of the Imperial City and reach the world outside somewhat distorted and magnified, and it is maintained that the plotting and intrigueing to oust the Regent still continues. Only a few months ago, foreigners at Peking learned through the usual underground channels that the Empress Dowager's party was again in the ascendency, and Tieh Liang would be called to the Grand Council and Fang Shan appointed Viceroy of Chihli, but as this has not yet taken place, it indicates that the Regent still holds the whip hand, and with his loyal adherent, Yin Chang, in command of the Army, his younger brother at the head of the Imperial Body Guards, and the other brother directing the affairs of the Navy, there is little probability of the opposition executing a "coup d'état" without someone being seriously injured.

GENERAL WONG HUI CHENG,
COMMANDER OF THE MUKDEN TROOPS

MANCHURIA AND HER WHEAT GROWING POSSIBILITIES

The potentiality of Manchuria is in her soil. It is a fertile Empire of over 360,000 square miles of territory, having all the natural advantages of climate and regular rainfall to insure bountiful harvests throughout its entire area. Today the largest crop is the soya bean, and will probably overshadow any other product for years to come as the demand is steadily growing and the export to Europe and America increasing yearly. The present annual export might be placed approximately at 500,000 tons of beans, 500,000 tons of bean cake and 40,000 tons of bean oil, besides the local consumption.

But in the near future, as the wheat producing and exporting countries grow in population and the annual increased domestic demand exceeds the increased annual supply to a point where these countries cease to export and are later obliged to import, Manchuria, the wheat belt of Asia, gives promise of becoming the largest of the world's producing areas.



Courtesy Northwestern Miller

MAP OF MANCHURIA SHOWING WHEAT GROWING AREAS

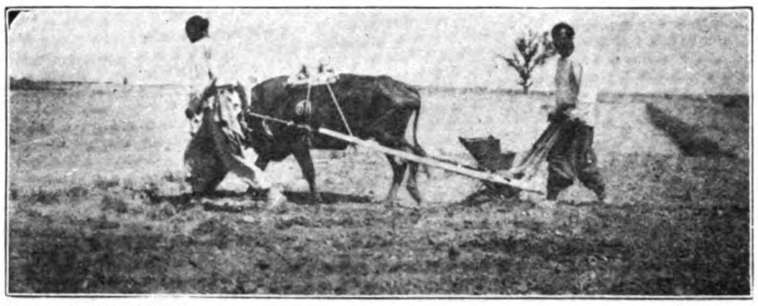
The present wheat crop of this agricultural empire averages 10,000,000 bushels annually, of which about 7,000,000 are supplied to the modern steel roller mills controlled by Russians at Shuan-cheng-pu, Chang-chun, Hailan and Harbin; those controlled by the Chinese at Kirin, Minguta and Asheho and by the Japanese at Tiehting. The balance represents shipments to Siberia and Chinese ports. It has been found that American flour cannot compete with this local product and the once profitable American flour trade has dropped in inverse ratio to the increased production and milling facilities of Manchuria until last year it was insignificant. This annual production does not represent the producing capacity of the limited area cultivated, which represents not over 2% of the entire wheat belt, once modern methods and machinery are introduced and the soil is properly tilled.

Mr. Edward C. Parker, a wellknown American writer and publicist, has made a special study of the agricultural potentiality of Manchuria and his conclusions point to the unusual adaptability of the territory for the production of wheat. Mr. Parker has been widely quoted as an authority on this subject. In an article from his pen appearing in the *Northwestern Miller* he advances his opinion that the world will inevitably look to Manchuria for its wheat supply. He writes:

"With the awakening that has recently come in the United States about wheat supplies and decreasing exports it is to be expected that the United States, as well as the European nations, will not only give greater public attention to the work of increasing the yield of wheat per acre, but also to ascertaining and getting in touch with new regions capable of producing and exporting wheat. A decade ago the wheat of Argentina and the durum of North Africa were hardly known in wheat trading centers; to-day the exports from these countries are recognized factors in the trade. In Argentina there is sure to be a great increase of wheat production capitalized from Great Britain, and in the French colonies of North Africa an increasing export may be looked for.

"A greater and more magnificent wheat territory, only partially exploited, lies along the eastern coast of Asia and north of the fortieth degree of north latitude. The most accessible and most fertile part of this region lies within the boundaries of that portion of the Chinese Empire known as Manchuria, and in the eastern part of Mongolia adjoining Manchuria (see map).

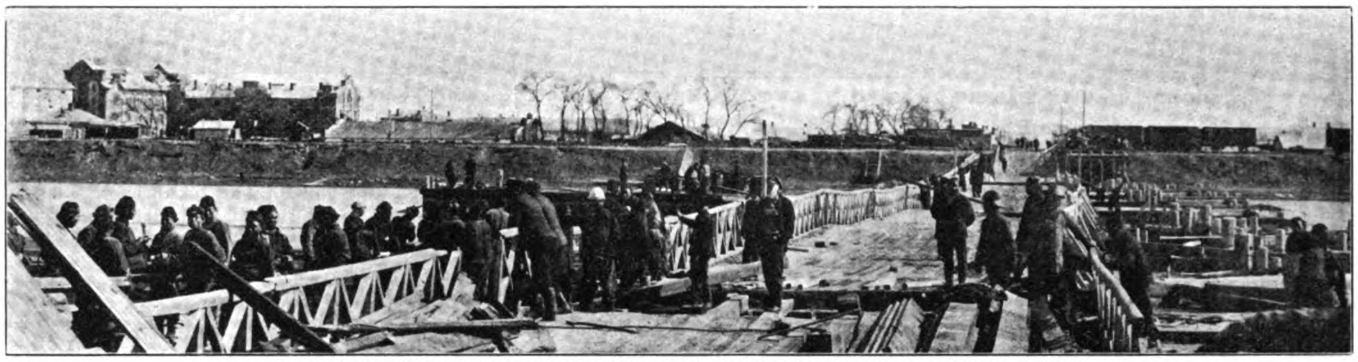
"The area of Manchuria is 360,000 square miles, or slightly greater than that of Minnesota, Iowa, North Dakota, South Dakota, Kansas and Nebraska, the present granary



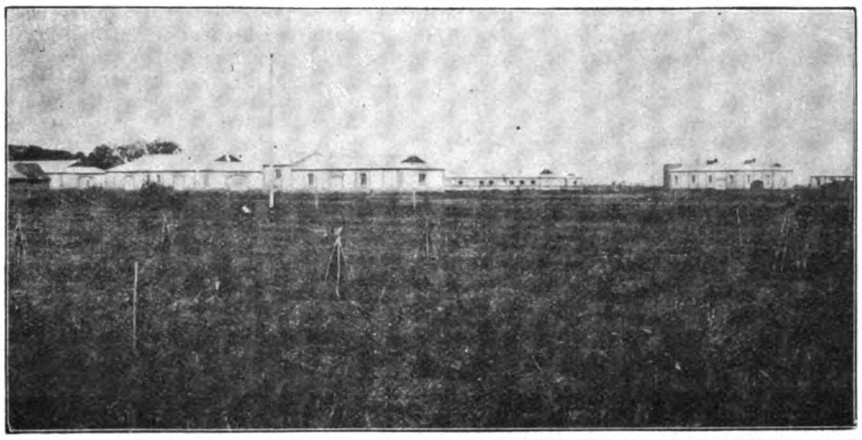
AGRICULTURE IN MANCHURIA

THE MAN WITH THE PLOUGH

NATIVE SEEDING IMPLEMENT



PONTOON BRIDGE OVER THE SUNGARI AT HARBIN FLOUR MILL TO LEFT



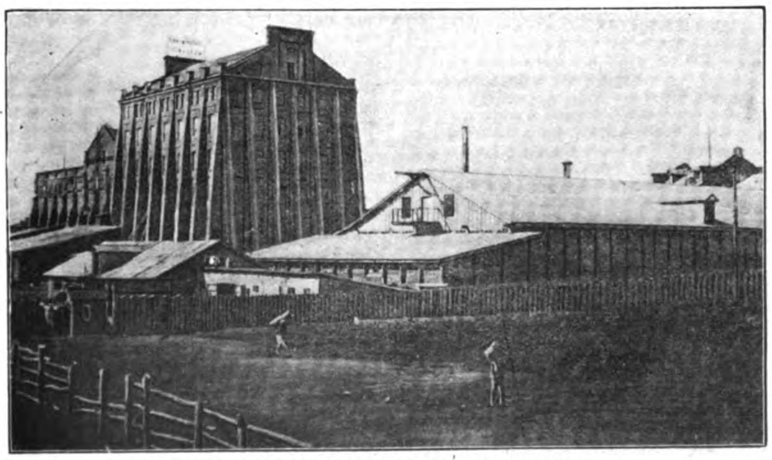
AGRICULTURAL EXPERIMENT STATIONS IN MANCHURIA

THE CHINESE STATION AT MUKDEN

THE JAPANESE LABORATORY AT DAIREN

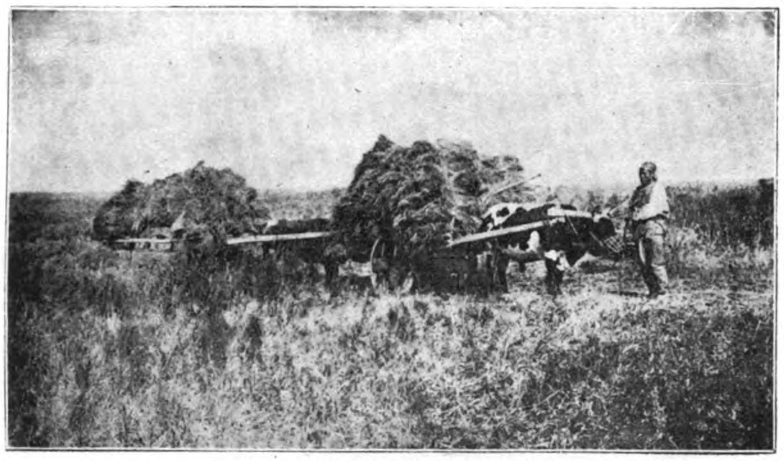
of the United States. It is a region of sure and bountiful harvests, with seasons of cold and rainfall that rarely vary from the normal, and where drought and flood rarely lay their devastating hands. It is a region that fires the imagination with its trade possibilites, that impresses you with its vastness and its potential wealth. Its fecund prairies, green valleys and broad water courses convince you that nature has substracted her stores of wealth from some other region that she might add to and doubly bless this spot for the habitation of man.

"The annual rainfall in this 'agricultural empire ranges from 20 to 40 inches, the larger part coming in July, August and September. Spring rains are not as common as in the Mississippi valley, but in the northern two-thirds of Manchuria drought is unknown and moisture is always near the surface in the loamy, retentive soils. For five months in the year the soil is locked up by frost, and enough snow usually falls to provide moisture for rapid spring germination.

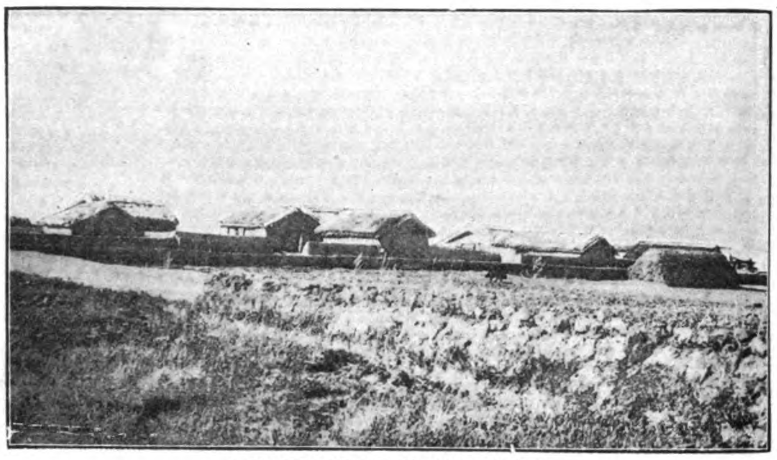


THE SUNGARI FLOUR MILL AT HARBIN

THE MANCHURIAN FLOUR MILL AT HARBIN



GATHERING HAY IN MANCHURIA



A MANCHURIAN FARM HOUSE

"Soil and climate are as favorable here for wheat production as in the watershed of the Mississippi. The native wheats are mostly of the bearded and smooth chaff type (similar to velvet chaff grade in the Minneapolis market), and fife, blue-stem and Canadian club types are also seen. It is more than likely that this part of Asia was the original habitat of several of our best types of American spring wheat. Although this region is naturally favorable for wheat production, the crop has never been extensively grown, principally because the yield of wheat is less per unit of land than millet, sorghum or maize, and the more productive and therefore cheaper foods are better adapted to the standard of life, and the purchasing power of the Chinese family. Nor have cash markets for wheat existed at the borders of the country to stimulate wheat production for export."

Noting the remarkable influence of the Manchurian bean on the vegetable oil market Mr. Parker points out that where America hitherto supplied the world with linseed and cottonseed oil, England is now exporting oil produced from the Manchurian product to America and he believed that unless a tariff wall would prevent it "dairy cattle on the Pacific slope will be fed their protein from the fields of Manchuria and soap will be made in America from the Manchurian bean oil."

As the Manchurian bean has influenced the American trade in oil, so is Manchurian flour superseding American flour in Eastern China. "Although wheat has never been extensively grown in Manchuria," writes Mr. Parker, "it has been cultivated in small quantities as far back as historical records of the country exist. Of late years it has been quite noticeable that the wheat-eating habit is growing among the Chinese. Wheat flour becomes an important article of diet in every family that has the price to purchase this comparative luxury. Even the coolie on the streets spends some of his small earnings for a cake made of wheat flour. In every Chinese city and town numberless small bake shops and restaurants may be seen along the streets, where wheat flour is baked in a sort of dumpling, and sold for a few coppers to the buyers of small means. A large part of this local demand for flour has always been met by the countless little stoneroller mills operated by donkey power, that turned out a coarse, poorly graded flour.

"The development of city life in the ports and along the modern railways in the last decade, and the stimulation in foodstuff trade due to the Russo-Japanese war, created a demand for wheat flour that surpassed the local supplies, and American Pacific slope flour was imported in large quantities to meet the demand. But the past season the imports of American flour dwindled to almost nothing, due principally to the depreciation of silver currency (the buying medium of China) and the resulting high silver prices for American flour bought on a gold basis.

TABLE I.

IMPORTS OF FLOUR (MOSTLY AMERICAN,) 1900-1909, PORT OF NEWCHWANG

(Barrels of 196 lbs.)

—Annual Average—

Years—	Foreign	Native	Total	*P. C.
1900-1904....	36,224	22.473	58,697	62.00
1905-1909....	137,061	107,346	244,448	56.00
1908	103,382	43,666	147,048	70.00
1909	153	88.817	88,970	.17

*Annual import foreign flour.

Mr. Parker believes there is no future for the American flour trade with northern China, even though the United States could continue its large exports of flour. The British and Chinese steam mills at Shanghai, with the winter wheat fields of Honan province tributary to Shanghai, and the Japanese, Russian and Chinese mills in the midst of the spring wheat fields of Manchuria, are sure to capture the flour trade of the Far East as soon as they perfect the technique of their business and the shrewdness of their salesmanship.

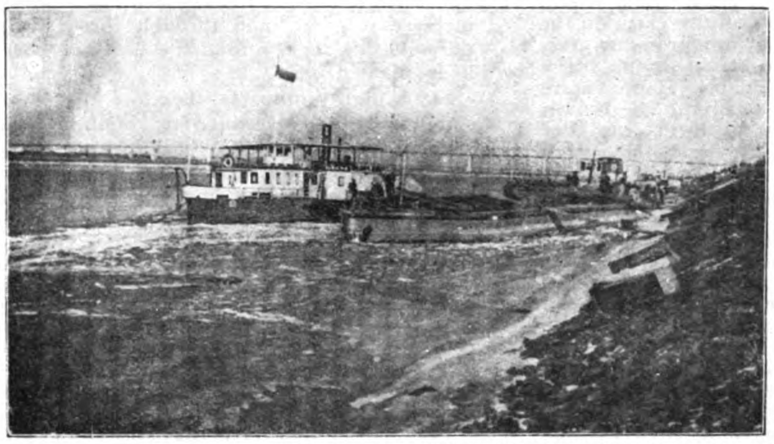
"The customs statistics shown in table I," he continues, "reveal a gradual increase in the imports of native manufactured flour (principally from Shanghai), and in all the interior trade centers the Japanese and Russian flour holds the market. These mills, although lacking the labor technique of the American mills, have advantages in cheap wheat, cheap labor and small transportation charges to markets that give them the inside track on the business. No. 1 wheat, at the present time, Jan. 1, 1910, is worth at the mills 84c., United States gold, per bu. and at harvest time wheat was selling for 66c., United States gold, per bu.. The highest and lowest prices for wheat recorded during the past three years have been 56c. and 84c., United States gold, per bu.

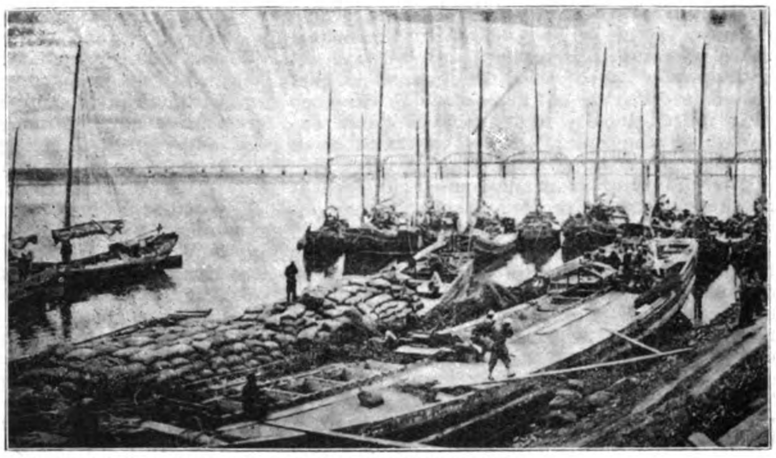
"Flour manufactured by the Japanese at Tie-ling with American milling machinery, and corresponding in grade to 'second patent,' is selling in Mukden this winter for $3.93, United States gold, per bbl. of 196 lbs, and Russian flour from the Harbin mills of similar quality is selling for $4.08, United States gold, per bbl. Against these prices American millers cannot compete in these days of 'dollar wheat' in America, and it is quite probable that Manchuria will cease to import flour and commence to export before another decade has passed.

"The present annual wheat crop of Manchuria is approximately 10,000,000 bus. Of this amount 6,729,781 bus. may be accounted for in the wheat supplies consumed by the steel roller mills, the most important native stone-roller mills, and the exports of wheat to Siberia and southern China; the balance being an estimate of the amount consumed by the small native mills.

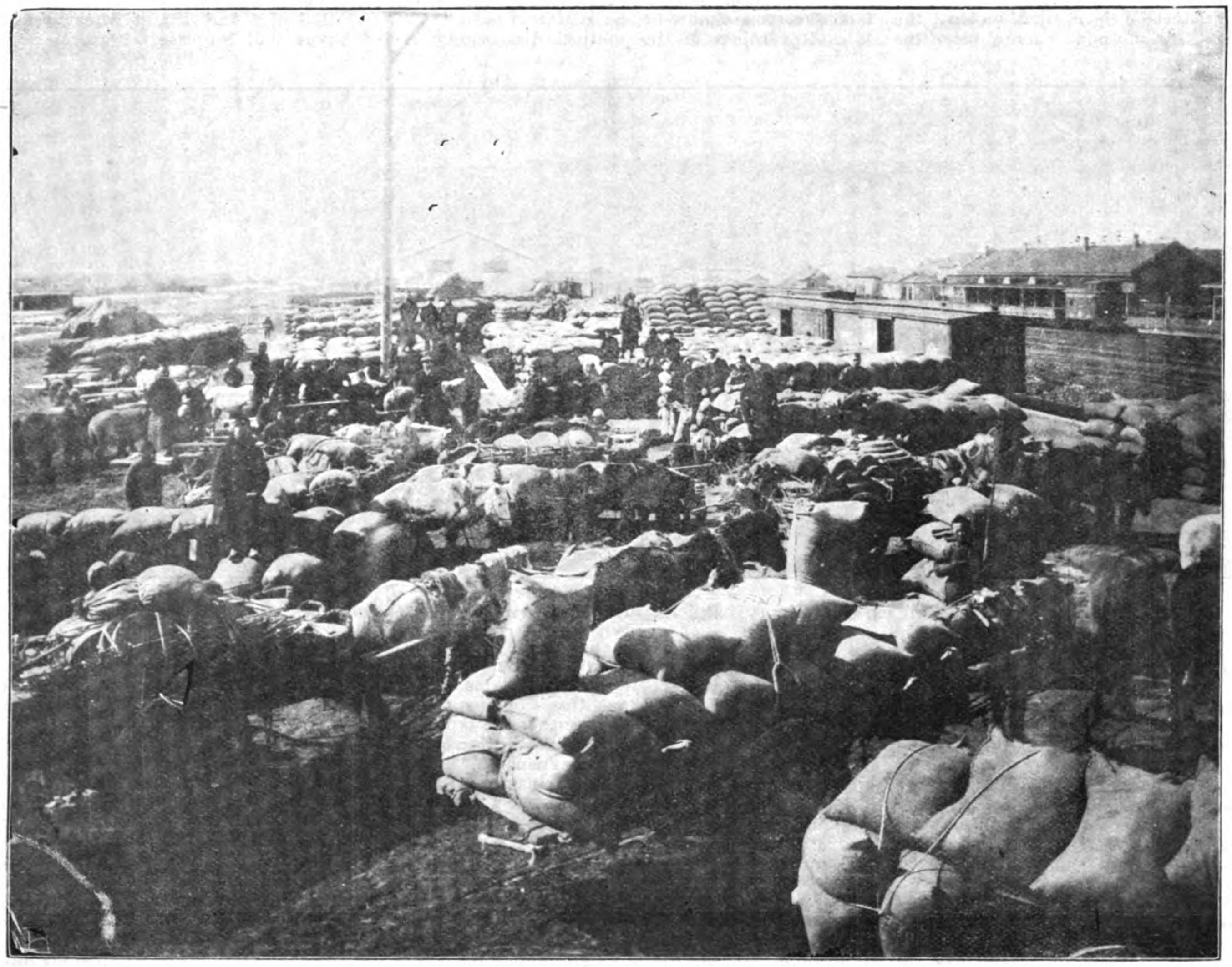
MANCHURIAN KAOLING (MILLET) FIELD

GOATS GRAZING ON MANCHURIAN HILLS

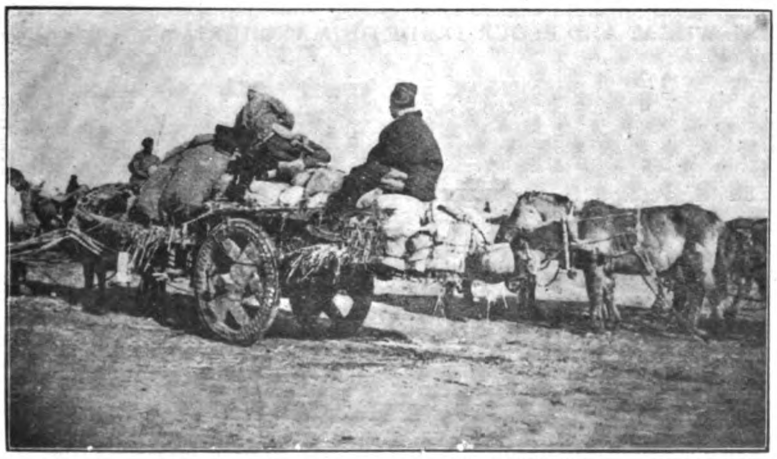




RIVER TRANSPORT IN MANCHURIA:—SUNGARI RIVER STEAMER AND GRAIN BARGES AT HARBIN



MOUNTAINS OF BEANS AWAITING SHIPMENT OVER TO DAIREN



TRANSPORT IN MANCHURIA—THE TYPICAL MANCHURIAN CART

"Harbin, a Russian city on the Trans-Siberian railway, is the largest center in the wheat trade. Steamship company and railway statistics show that 5,400,000 bus. of wheat passed into Harbin last year, of which 3,600,000 were milled locally and 1,800,000 were exported on the Sungari river to the Siberian military posts along the Amur river. This is the only important movement of wheat in the country, all other stocks being consumed locally.

"Wheat comes into the mills and to the rivers and railways from almost incredible distances. In the winter, when the rough, ungraded roads are frozen hard and smooth, the natives haul wheat for 200 miles, in some cases, by means of a heavy, two-wheeled cart drawn by four to eight mules. Long trains of these carts, travelling together for protection and companionship at night, can be seen on the main highways all winter and are the most picturesque feature of Manchurian life.

"Wheat production is carried on by the most primitive of methods, more primitive donkeys, beats out the grain on a hard, clay floor and the winds of the earth do the rest. The farmer in Manchuria grows no grass crops, he keeps no live stock except a few work animals and a few pigs, but Nature refuses not her increase to him. The brown, loamy, fecund soil gives birth to crop after crop of food for man and beast.

"Considering the small area of land devoted to wheat at the present time, and considering the large areas of unoccupied land in the north of Manchuria and eastern Mongolia, it may be said that this region of Asia is capable of producing from 300,000,000 to 400,000,000 bus. of spring sown hard wheat, even with native methods of culture. Whether this amount of wheat is ever produced in Manchuria, and if produced what per cent would be exported, are matters hard to estimate in view of present conditions ni Manchuria. The facilities for producing a large surplus of wheat for export are present, but the future colonization and development of this great country are more or less indeterminate."

Regardless of the political dissensions re- his wants are easily satisfied, his naural-increase is great, and through these qualities and his thrifty industry he stays where he is planted.

"It is highly probable, therefore, that Japan and Russia will continue to dominate and develop the transportation, milling and storing of wheat in Manchuria, and that in the northern wheat lands Russian example and influence will slowly increase machine production by the Chinese colonists. Eventually China wlll probably get her railways into the wheat lands of eastern Mongolia and northwestern Manchuria, and Chinese colonists from the south will follow in its wake. They will never produce great crops of wheat for export until they take up machine production, and that alternative is generations away from the present. With native methods of production, however, the yare now producing wheat for export; and as the land becomes occupied there is little question but that the amounts of wheat available for export will increase.

VIEWS SHOWING STOCK UTILIZED FOR BREEDING PURPOSES AT MUKDEN FARM.

AMERICAN MACHINERY USED ON GOVERNMENT FARM NEAR MUKDEN.

even than in the days of the scythe and the cradle in America; and yet the facility with which the work is carried out is a constant marvel to those who are accustomed to machine production. In many seasons of the year the farming communities are sleepy and apparently lifeless. On all sides your eye restson broad, waving fields of millet, sorghum, corn or wheat, but not a man can be seen tending the crops. Here and there in a village sits an old man smoking his long stemmed pipe, and an occasional coolie sleeps by the roadside with his head in the bright sun and the flies buzzing over his face. No noises, indicating industry and busy people, arise to disturb the seeming lifelessness of the community. Only an occasional shrill, scolding squabble among some of the housewives tells you that you are not in a deserted village.

"But when the busy seasons of seed time and harvest come around, the very earth seems to open and give birth to coolies. The fields are dotted with patches of blue cotton piece-goods scattering and covering seed, gee-hawing oxen and guiding a rude plow, cutting the long stalks of sorghum with a corn knife, or pulling wheat out by the roots and shocking it in neatly capped shocks.

"At these times the slow-going, patient coolie works from daylight to sunset, and harvest is completed in an incredibly short time. The threshing of all cereals begins in October and continues way into the winter; every day when the wind blows, for the native uses no mechanical contrivance to separate the wheat from the chaff. A stone roller, drawn by a pony, or a couple of specting this territory the development of the Manchurian wheat belt will be stimulated whether controlled by China, Russia or Japan. Mr. Parker does not believe that either the Japanese or Russian will ever colonize the land, but they will encourage the expansion of the wheat growing industry by installing mills and opening up markets. Of the Chinese as colonizers Mr. Parker says:

"The Chinese colonize slowly. No leaving home for them unless pressed by economic necessity. Up in Northern Manchuria the rivers run north into Russian territory and Chinese colonization for a long time to come will be slow and difficult. Yet where the Chnese settles, his roots go deep. He is patient and long suffering; he has not nerves:

There will be wheat enough in Manchuria to mill and supply the wants of northern China, and no doubt an insistent foreign demand at high prices will in the future call forth many millions of bushels of wheta for export. If we Anglo-Saxons must have wheat flour in our diet, and are willing to pay high prices for it, the Manchurian farmer will be quite content to bend his back sowing and garnering for us, and make his own diet from the more productive and cheaper foods, such as millet, sorghum and maize."

The following table was compiled by Mr. Parker from trade records for the year 1909 but does not include the wheat consumed by the thousands of small stone mills through-out the country:

ANNUAL WHEAT AND FLOUR TRADE OF MANCHURIA

Trade Centers and Trade Routes	Bus. wheat ground by steam mills	Bbls. flour produced by steam mills	Bus. wheat ground by native mills	Bbls flour. produced by native mills	Bus. wheat exported	Bbls. for'gn flour imported	Bbls. native flour imported	Bbls. native flour exported
Harbin District (Russian)	3,600,000	800,000	....	....	....	....	....	....
Ninguta (Chinese	893,200	198,488	60,270	13,394	....	....	....	....
Kirin (Chinese)	9,000	2,000	....	....	....	....	....	....
Tie-ling (Japan in Manchuria)	291,666	64,500	....	....	....	....	....	....
Tie-ling (Chinese)	....	....	70,000	15,555	....	....	....	....
Manchuria to Siberia ...	....	....	....	....	1,800,000	....	....	251,323
Manchuria to Southern China	....	....	....	....	5,645	....	....	....
All customs ports	....	....	....	....	....	22,651	207,381	....
Totals	4,793,866	1,064,988	130,270	28,949	1,805,645	22,651	207,381	251,323

THE FAR EASTERN REVIEW

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CONTENTS

PAGE

The Chinese Army 335
The Imperial Guards 337
Manchuria and Her Wheat Growing Possibilities 346
The New American Diplomacy in The Far East... 351
James A. Farrell 353
The Philippine Carnival 353
Far Eastern Trade Situation 353
China and Tibet 354
The Frontier Region of Tibet or the Marches of the Monntze 360
Contracting News 362
Far Eastern Railway News 353
Philippine Mining News 364
Far Eastern Engineering, Construction, Commercial and Financial News 364
London Metal Market 367
Far Eastern Share Quotations 368

THE NEW AMERICAN DIPLOMACY IN THE FAR EAST

Once again echoes of discontent reach the Far East from American financiers not included in the Group co-operating with the administration in its Far Eastern policy. That some grounds for irritation on this score should exist is quite natural, as others were first in the field for participation in the Hukwang Loan. It appears that repeated pressure has been brought to bear on Washington, to sanction the admission of other banking firms into the Group, or secure endorsement for independent operation in China, and a final and definite reply has been forthcoming that the present arrangement must stand as it is. Such a decision undoubtedly carries keen disappointment to those who have aspired to be taken into the confidence of the Administration, and creates a natural feeling of resentment against the policy of the Government. As was pointed out last year in discussing this same question, there are weighty reasons why only the strongest and most influential American bankers should be selected to co-operate with the Government in the expansion of its Chinese policy, as the national prestige cannot survive another Canton-Hankow fiasco, with all its charges of graft and corruption on the part of Americans. It was also made clear at that time how the Americans were maneuvered off the board through the intrigues of others with high Chinese officials, and the concession surrendered in deference to China's desire to regain control and construct the road with her own money. As the firm of J. P. Morgan & Co. shouldered all the odium attached to this fiasco, despite their evident good faith and desire to restore American financial prestige and complete the road, common equity demanded that they should receive the first consideration of the Government in any new loan enterprise in China. The Chinese Government also owed something to this firm, for the unfair criticism to which they had been repeatedly subjected as a result of their acting as agents for the sale of the concession. It stands to reason that the Administration at Washington would never place itself in a seemingly untenable position unless some highly important reasons guided their policy. Whether right or wrong, the Administration has committed itself to a course of action, which it believes is best for the larger national interests. Naturally some disappointment is displayed in certain circles, but we hold that this discontent, however justifiable, should not find expression in an attack on the general policy of the Government, in its so called "Dollar Diplomacy."

For years America has lived within itself, quite independent of the rest of the world for its material prosperity, content solely on keeping pace with its marvellous internal development. Food and other natural products made up the bulk of the nation's exports, and the manufactured articles were consumed at home.

No combined or intelligent effort was made by the manufacturers to secure foreign trade, and discouragement rather than assistance met the far sighted man who ventured into this field. How often have we been told in the past by the heads of our greatest manufacturing enterprises, "It is against our policy to advertise or incur expenses in developing foreign markets. We don't need the business, as our works are filled with domestic orders for a year ahead."

But the pendulum is swinging the other way. The panic of 1907 was a revelation. The cyclone hit with its full force those whose policy rejected the foreign fields, while many enterprises safely rode out the storm, with the aid of their export trade. It will not be long now before the American manufacturer will be compelled to divert some of his energy into the export field, as the home development already shows signs of falling off. Where will he turn and compete on equal terms with the European manufacturer, already with the advantage of lower priced labour, and government subsidies on their side? The cry for help will then go up to Washington in no uncertain manner, and those who now sneer at and decry the "Dollar Diplomacy" of Knox will bless their stars that one Secretary of State had the foresight to pave the way abroad by using his best endeavours to extend the field for American loans, through financiers whose names are a guarantee of good-faith and stability.

As regards the success of this new diplomacy in the Far East, it is too early to express the opinion that it has brought neither profit to the Group or prestige to the country. It is apparent however on the face of things that no tangible results have yet been secured, but this is due to obstructions not easily overcome in a few months, rather than to any inherent weak spot in the policy. The question has been asked in América if the Hukwang loan is held up because of the indisposition of the lenders to leave the expenditure of the funds solely in Chinese hands?

The application of this loan hangs fire because the Central Government at Peking is too weak and vacillating to impose its Imperial will on the provinces against their protest. And until this vital question of sovereign rights is settled one way or the other, railway construction throughout the Empire will remain at a standstill, as no official can be found to preside over the Board of Posts and Communications willing or strong enough to assume any responsibility. The Regent, Grand Council, Waiwupu and Board of Finance are apparently anxious for the foreign loan to be applied, as the construction of the railways is highly imperative for national defense. None of them, however, seem to have sufficient courage to brave the threatened revolt in Hunan if this course is adopted, and shirking their responsibility to the nation and obligations with friendly foreign powers, they unload the difficulty on the shoulders of the President of the Railway Board and signify their willingness to abide by his decision. The situation is such however that if he conforms to the pretended wishes of his superiors, the Hukwang gentry will raise such a disturbance that in the end he will be sacrificed to quell their anger. The Regent, members of the Grand Council, and every leading official of the Empire in power at Peking are at present playing furious politics to save their official skins against the inevitable day of constitutional government. The Regent is catering to the people, and educating the Chinese proletariat to believe that the dynasty is solely concerned for its welfare, and in the last conflict with the old regime, he can be depended on to throw over its adherents and take up with the new order of things as the safest and only plan for the preservation of the dynasty. And the wily old conservative officials in Peking have not passed all their lives in such an atmosphere of intrigue and duplicity without knowing their own, and they too are closely watching for the cat to jump, so as to jump with it. No professional tight rope walker can compete with his Chinese political prototype in balancing in the right direction to preserve his equilibrium. And they know that whoever is appointed to the Presidency of the Railway Board, and complies with the Imperial wishes, will be sacrificed to the Hunan gentry, as the Government lacks the stamina to uphold and support him. In the face of such conditions no official will risk political oblivion to please the Powers that Be. This explains Tang Shao-yi's retirement from the Presidency of the Railway Board, and the appointment of Sheng Kung Pao to the post. If Tang is considered the ablest diplomat of China, his successor is also astute and wily, and his intimate relations with the Hukwang gentry, as president of the Han-Yeh-ping enterprises, makes it extremely doubtful whether he will brave their displeasure. The Pinghsiang Colliery and Railway, Tayeh Iron Mines and Hanyang Iron & Steel Works under his able direction have contributed largely to the material prosperity and advancement of the Hukwang provinces, and Sheng's influence, if properly directed, might overcome the hostility to the loan. This appears to be the only solution to the present situation. Sheng cannot be expected to incur

the people's ill will in a province where he has so much at stake, and the foreign financiers will not alter the terms of a loan which is considered as already conceding far too much for the proper safeguarding of its expenditure.

So the only solution would seem to lay in Sheng's ability to win over his people, or an unlooked for stiffening of the Regent's backbone, in exacting compliance with the Imperial desires in the face of almost certain revolt. On the outcome of the situation hinges China's railway development in the next few years. The opposition of the Hukwang gentry is based not so much on the acceptance of a foreign loan, as on the terms of the agreement which shifts the control to Peking and deprives them of directing its expenditure. It is a mistaken idea that the Chinese are opposed to all foreign loans. The proof of this can be found any day in Shanghai, for nearly every provincial railway project has been hawked around the financial market seeking a loan for construction, but for lack of sufficient guarantees have been rejected by the responsible foreign banks and commercial houses. So it is hardly fair to cavil at the diplomacy of Knox for delay in applying the proceeds of the loan. Instead, his policy should merit the approval and loyal support of the entire country for the opportunities opened for American trade.

There is a disposition in some quarters to criticize the final terms of the Hukwang loan and accuse the State Department of slighting the manufacturers for the benefit of Wall Street. The American Financial Group, in its negotiations with the European bankers, had held firm for several months on the question of equal participation in the appointment of a purchasing agent, to insure equitable treatment in the awarding of tenders. Guided by previous experience where American material although lowest in price had been rejected by European Engineers in China on the grounds of inferiority, there was some justification for this attitude. The negotiations were brought to an end and the agreement signed, by the Americans waiving the right to nominate a purchasing agent, on the condition that all material be purchased in the open market at the lowest tender, thus insuring fair treatment to all parties. In addition to the official terms of the Loan Agreement, the European Groups signed a private understanding with the Americans, to the effect that their respective purchasing agents, before entering into their duties, must obligate themselves to an impartial awarding of tenders. So although it would appear from the wording of the loan terms, that the American manufacturing interests had been sacrificed to Wall Street, the real facts reveal that as far as possible the American Group and the State Department have benefited the manufacturers by eliminating preference for materials of any one nationality, and guarding against unfair methods in the awarding of tenders. Echoing the traditional slogan of Great Britain, the Americans join in the cry, of "A Fair Field and No Favor," as their only stipulation for a chance to compete in China's railway development.

And no American can criticize the diplomacy and methods which have opened the door for products of his country to compete on equal terms with Europe. As yet no profit may have resulted from the "Dollar Diplomacy" here revealed, but assuredly there is some appreciation due those who have paved the way, and created the opportunity.

From the Hukwang Loan we turn to the Chinchow-Aigun railway affair, which, although sanctioned by China to be financed by Americans and constructed by British, was bitterly opposed by Russia and Japan supported by their respective allies, and the scheme held up. In other words, America was isolated and her diplomacy brought face to face with the opposition of four great powers. Now according to some writers who misunderstand the temper of America, the latter should have plunged into war over this interference with her policy in China, but the Americans haven't lost their heads to the extent of waging war on four powers for the sake of an insignificant political railway in China. The Government has adopted the wiser course of meeting diplomacy with diplomacy, and a solution is being reached through friendly negotiations.

It might be urged that the State Department and the Financial Group have brought little prestige to America as a result of this affair, but it is too early for recriminations and the end may prove entirely satisfactory to all concerned. At any rate, Knox's diplomacy tore away the veil, and uncovered the position of the other great Powers, so that America knows for a certainty where she stands in the game. Her eyes have been opened, and from now on she can play her hand from the same deck of cards as her opponents. There may be little profit in the game at present, but the cards are still being shuffled and with an honest deal, some winnings may yet accrue to the player whose attention is now riveted on the board. Any diplomacy which will awaken the country to a sense of its true position in a losing game, is certainly to be commended, and the nation owes something to Knox and the Group for their share in bringing about a situation from which it may yet emerge with profit and prestige instead of loss and ridicule.

And again in the matter of the Chinchow-Aigun railway agreement, some American manufacturers have raised the cry that Wall Street is the sole beneficiary of the negotiations through the construction contract passing into British hands. But a clear exposition of the facts in the case shows that it was a most equitable division. The same argument was also raised in Great Britain to defeat the entrance of Pauling & Co. into the field, as an alleged secret agreement was published some months ago, wherein it was stated that Pauling & Co. had agreed with the American Group to purchase in America all the material for the equipment of the line. As a matter of fact the Agreement with the Chinese Government carries on the face of it, equitable treatment to all parties, as the construction is to be carried out by contract at a flat price per mile. Under such specifications, the contractor's profit is his first concern, and the materials must necessarily be purchased in the open market without undue preference to any one nationality. The contractors are undoubtedly intensely loyal to British products, but their first concern is their own pockets, and if American materials are cheaper than British on the same specifications, and other conditions being equal, it is clear they should receive the order. And the understanding between Pauling & Co. and the American Group, insures a fair field for the materials of both countries. Surely nothing could be more satisfactory. For China, it is the best arrangement yet concluded for railway construction in the Empire, and makes impossible the wasting of funds, and additional loans to cover hasty estimates and other deficits, besides eliminating the usual five per cent purchasing commissions. International jealousies and politics have delayed execution of the contract, but there is every reason to hope that a friendly solution will be found to the present negotiations, and the line will yet be constructed with some changes of route to satisfy Russia's ideas. And while neither prestige or profit has yet redounded to the so called new American diplomacy underlying the scheme, the country should feel highly gratified that its traditional policy has such an able exponent in the person of the present Secretary of State.

We turn now to the $50,000,000 Currency loan which has been hanging fire for some months. The critics of the Government at home sneer at the protracted negotiations, and ignoring the intense opposition of certain interests at Peking, ask if the loan is blocked because of the Chinese unwillingness to accept an American financial adviser. And this appears to be the general idea on the situation.

Pending the final outcome, it is too early to discuss the negotiations leading up to and surrounding this loan, but there are some facts which will bear the light of publicity. Criticism has been directed against the Americans for inviting the European Groups to participate in the loan on equal terms, and forming the quadruple syndicate for future financial operations in China. This action was justified and made almost imperative by repeated declarations of American policy towards China, notwithstanding the fact that the currency loan was signed in the preliminary draft as a purely American undertaking. In the first place, it is possible that a large number of the bonds would ultimately find their way to the European market, and be held there, and commercial fairness demanded that the European bankers be admitted to a share of the profits. Again the specific object of the major part of the loan was reformation of the currency. The advent of a stable currency in China would result in depriving the European banks established throughout the Empire of large profits now enjoyed through the fluctuation of exchange. While the opposition of the European Banks might not defeat the proposed reform, their co-operation would materially advance its successful application. And again common equity and fairness entitled them to some share in the profits of the loan, as an offset against the decline of their exchange business. There are other good reasons why it was considered politic to admit the European Groups to a share in this special transaction and organize for the purpose of lending money in the future to China. However, it is understood that if China refuses to admit the desirability of the quadruple arrangement, and insists on a purely American character of this special loan, the American Group stands ready and willing to carry it through. The appointment of an American Financial Adviser for the Chinese Government, or to supervise the expenditure of the loan, has never been urged. The Americans have held to the position that the application of the loan funds for the purpose of currency reform was highly important at this juncture to the future of China, and every safeguard should be thrown around it to provide against the funds being diverted for other purposes.

Currency reform in China paves the way towards other and greater reforms. China has endeavoured for some years past to have the Powers consent to a revision of the existing treaties, which will permit the increase of import duties and abolish the likin and transit dues. Great Britain and others have declined to consider the overtures on the ground that China has persistenly ignored the Mackay Treaty and refused to reform her currency and comply with other important provisions.

With her currency on a stable basis, the first step towards the revision of the treaties would be made. There are other highly important considerations why the reform of the currency is imperative to the welfare and progress of the Empire, and why every precaution should be taken to insure the faithful application of a loan to this purpose. The American Group have not attempted to dictate to China the acceptance of any particular currency scheme, before advancing the funds. In effect they say to the Chinese Government, "Draw up any good and feasible scheme you believe will bring about the desired reform, and all that we ask is that someone be appointed to see that the funds are expended in accordance with the program outlined." There is no suggestion of a Financial Adviser to the Government, with all the powers that go with such an office. The status of the appointee would be more in the nature of a Secretary or under Auditor.

It will be remembered that of the $50,000,000 to be borrowed, $35,000,000 was allotted to the currency scheme, and $15,000,000 was to be applied to urgent requirements in Manchuria for the development of railways, harbours, nidustries, etc., and to cover a deficit in the treasury. It is understood that a part of the funds was to be appropriated for the development of Hulutao Harbor, and the construction of a section of the Chichow Railway. It is not difficult to read between the lines and understand the real reasons underlying the deadlock in the negotiations, and time will prove to the critics of the Administration that American diplomacy has again pursued its traditional lines of friendship towards China, and fully merits the commendation of the nation, instead of hasty and illtimed criticisms.

—G. B. R.

JAMES A. FARRELL,

The New Head of the United States Steel Corporation.

The elevation of James A. Farrell from the presidency of the United States Steel Products Company—the selling branch of the parent corporation—to the head of the great Steel Corporation itself, marks a turning point in the policy of the financiers controlling these gigantic enterprises. The significance of this step has apparently been overlooked at home, and surprise manifested that others high in the industry were sidetracked to give place to Mr. Farrell. But a little careful thought will demonstrate the undoubted wisdom of his selection, and the lesson should go straight home to the hearts of every head of the larger manufacturing enterprises in America, who have steadily refused to look into the future.

The time has arrived when the United States must emerge from her splendid trade isolation and develop foreign markets for her manufactured products. The days of dumping the surplus of the mills into the export field, or compelling foreign customers to wait a year or more for the filling of their orders has long since passed away. The marvellous development of the domestic field has reached its climax; the country is gridironed with railways, and in place of the unprecedented prosperity of the last two decades due to internal progress, a lull in new railway construction is faced, with the consequent falling off in the demand for steel and railway material. And as the steel industry is the backbone and barometer of the national industrial prosperity, the business of the machinery and allied trades expands or contracts in sympathy with its fluctuations.

The mills and establishments of the leading American manufacturing enterprises have been erected and are operated to keep pace with the enormous protected domestic consumption. If conditions at home show signs of a falling off in sales, the markets must be developed elsewhere, to insure constant operation of the plants and interest on the investments.

The era of organization and high financiering is disappearing. Nearly all the protected manufacturing industries have been developed into huge combinations and cost of production and marketing reduced to a minimum, and now the country faces the problem of finding a constant outlay for the products.

When the United States Steel Products Company was organized in 1903 to handle the export end of the parent corporation, the financiers scanned the field for the best equipped and qualified man to build up this important trade. In the manager of the foreign department of one of their own component companies they had a man who successfully developed his branch of the business and made the name of the American Steel & Wire Company known throughout the world, and they selected him to guide the policy of the larger Products Company. But before accepting the position, he exacted the stipulation that a certain percentage of the entire steel output of the corporation be allotted to him for marketing abroad, and then sure of his ground, and safe in the knowledge that he could fill his orders promptly, he went to work. Under his expert management and knowledge of foreign conditions a huge business has resulted, the exports of steel and steel products increasing rapidly from year to year, until in 1909 they were 10.3 per cent of the entire sales of the Corporation. This represented a gain of 26.3 per cent over the business of 1908, and 1909 closed with unfilled orders on the books of the Products company destined for foreign fields amounting to nearly 500,000 tons.

The report for 1910 has not yet reached us, but the indications are that the year closed with another substantial advance, and passing the tonnage limit allotted for export. It follows that at the beginning of the new year the president of the Products Company had to request a still larger proportion of the steel output of the country for his branch of the business. When the time came for the election of a new president for the great parent corporation, the financiers have turned to the man who could save the situation and market the goods. And they unanimously elected the one who had made it possible for American steel to gain a firm foothold in foreign countries against the competition of the world.

And the old Captain of Industry who, safe from the competition of other producing countries, organized and created things for the protected domestic field, gives way to the first of a newer type whose ability and judgment makes possible the dreams of his predecessor and insures the future industrial welfare of the nation.

In James A. Farrell, the newly elected president of the United States Steel Corporation, is typified the future Captain of Commerce who will lead the country in the great international struggle for trade supremacy in the markets of the world. There is a moral to the selection of Mr. Farrell and the recognition of his ability by the greatest financial interests of the country, that other heads of corporations should profit by.

THE PHILIPPINE CARNIVAL

The Fourth Annual Carnival, held in Manila under the auspices of the Philippine Carnival Association and concluded March 2, was an unqualified success. This annual Philippine fiesta may now be recognized as a permanent Philippine institution.

According to the report of Secretary Scott the total of receipts from every source was ₱122,533.40 and the total of expenditures, ₱94,792.84, leaving a balance of cash on hand of ₱27,770 56. In addition, assets in the form of bills receivable to the value of ₱9,868.69 and property in hand to the value of ₱13,700 make in all working capital amounting to ₱51,339 65 for the ensuing year. The general daily attendance was greater than during the 1910 Carnival, for while the latter extended over a period of ten days, the 1911 Carnival was confined to eight days and the receipts for admission showed a falling off of but ₱5,599. These figures demonstrate that the institution is growing in popularity and that it has the substantial support of all progressive classes in the islands. And what gives the greatest satisfaction to the authorities, the active interest of all classes of Filipinos has been more general than ever before.

In the provincial exhibits in which 19 provinces participated, marked evidence of progress was noted in the development of native industries, and in the exhibit of the Educational Department the evidence of the stupendous influence of practical training in the arts and trades and the interest displayed by all the people made a profound impression on the thousands of interested visitors.

Another important feature of this carnival was the extensive exhibit of live stock and poultry, a new feature. This was a surprise even to residents of Manila and the result of the active interest of the Bureau of Agriculture in developing the improved stock was manifested here in the selected animals on exhibition.

The bench show held under auspices of the Kennel Club proved one of the leading attractions of what was termed the "Main Stem."

The bureaus of forestry, science, health, printing, agriculture, internal revenue and indeed every department of the Insular Government vied with each other in making the exposition representative of things Philippine.

The co-operation of the merchants was also evidenced by many individual exhibits representative of Philippine manufacture and trade. Among these the cigar and cigarette manufacturers made an extensive exhibit, the Compañía General de Tabacos de Filipinas, Germinal, Alhambra and La Prueba, all being representative while others showed their interest in a substantial way.

In the machinery display a marked improvement was noted compared with 1910. Engines, mining, agricultural and manufacturing machinery were displayed by local representatives. Among these Mr. Frank L. Strong had a complete plant in operation demonstrating all kinds of machinery from a compressed air drill to a huge ventilating plant while a small electric installation served to illuminate his section. This building was the center of attraction for all provincial visitors, and all went away greatly benefited by increased knowledge of the advantages of modern methods and machinery in the development of the insular industries.

Other firms in Manila were also represented in this department, among them Messrs. Castle Bros. Wolf & Sons who make a speciality of agricultural machinery.

Of especial interest was the display provided by Messrs. Ynchausti & Co., the leading distillers in the islands.

The most striking feature of this carnival, and which reflects great credit for enterprise on the Board of Directors, was a series of Aeroplane Flights by Mr. Mars. There were eight flights in all, and every one of them successful. No record flights were attempted, but an altitude of 5,700 feet was made on one occasion and none were less than 2,000 feet. The highest altitude made we believe marks the record so far in the Orient. Perhaps no feature of the Carnival served to attract wider attention than these flights.

There were many visitors from Far Eastern Ports and expressed themselves pleased with the exposition and general experience as guests of the Leal City.

Director General Stewart is to be congratulated on the success of 1911 Carnival, but he modestly gives the credit to his able staff and to their loyal support places the success of the week's festival. Throughout there was a demonstration of the effectiveness of team work backed by the spirit of co-operation. The civil authorities, the military and naval departments, the merchants, manufacturers, and agriculturalists, together with the residents of Manila and the provinces, demonstrated what may be accomplished by working together.

Out of the annual Carnival have developed plans for a permanent annual exposition of Philippine products in the city of Manila and an act of the Philippine Legislature of January 30 appropriating the sum of ₱50,000 for expenses incident to the establishment of this institution. The first annual exposition is to be held this year or in 1912 at the discretion of a Philippine Exposition Board.

The credit for the sentiment that made this legislation possible must be given the Philippine Carnival Association in its four years of active work in spreading exposition gospel.

FAR EASTERN TRADE SITUATION

The address of Chairman Balloch at the half-yearly meeting of the Hongkong and Shanghai Banking Corporation held in Hongkong, February 25, while conservative in character, was most optimistic in tone. This authoritative review of Far Eastern finance and trade is indicative of the general spirit prevailing and gives promise of increased activity in leading lines. We take some pleasure in reproducing here a few excerpts from Mr. Balloch's address as follows:

"In the Straits Settlements and Federated Malay States mining, agriculture and trade generally continue to show satisfactory progress. There is a considerable increase in the export figures, mainly due to the larger export of rubber and the enhanced price of tin. Tin continues to hold first place in the stable products of the Malay States but it has a growing rival in rubber which may some day challenge it for the premier position in trade figures.

"From the great rice producing countries, Burmah, Siam and Cochin-China, last year's exports were all up to the average, and the native cultivator must have done well. Crop prospects for the current season are reported to be favourable, with the exception, perhaps, of those of Siam, where the yield is estimated to show a falling off; but results are so dependent on climatic conditions which may vary from day to day that, in places where official figures are not supplied, forecasts for rice harvests should not be taken too seriously.

"In the Philippines the feeling is gaining ground that the long period of depression is passing and that a steady improvement in trade may now be looked for. The low price of hemp and sugar is no doubt affecting the purchasing power of the natives, but, as some set off against, better prices have been obtained for copra and the export of this product is steadily increasing.

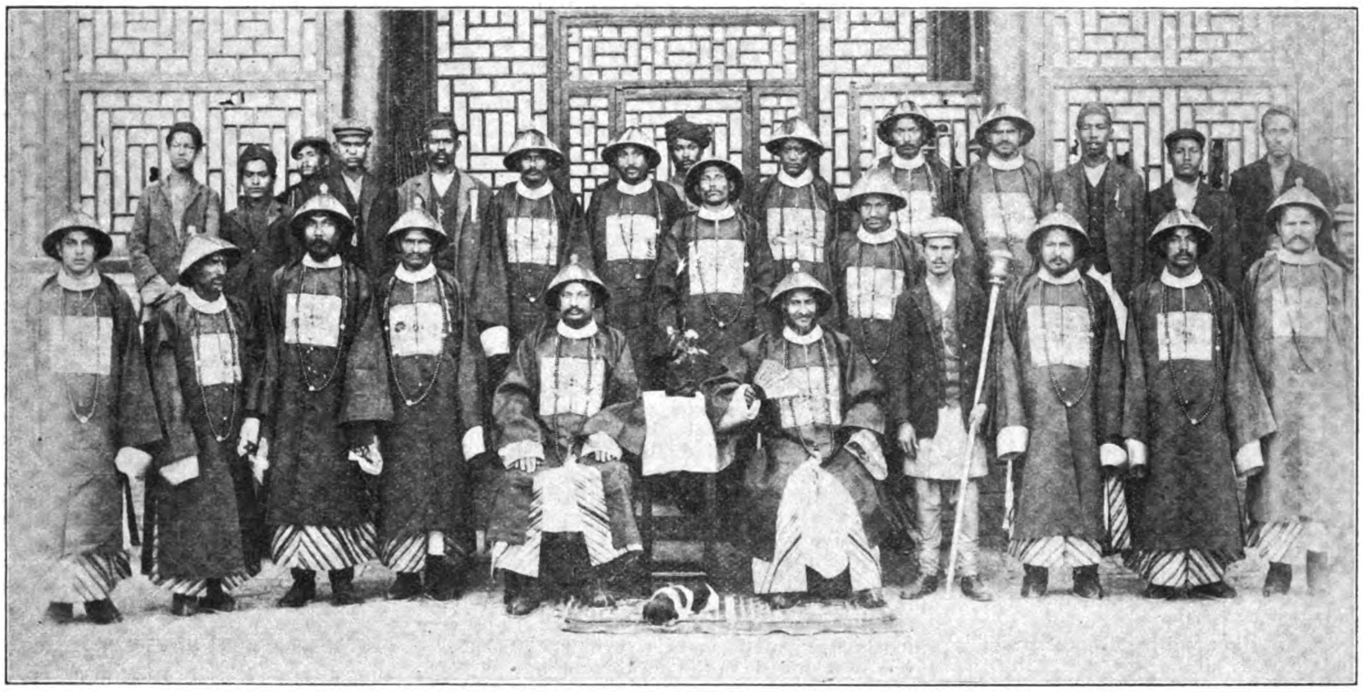
"Advices from Japan lead us to believe that expansion in the internal trade of that country may reasonably be expected. Export figures for the past year were the highest on record while import figures also showed a consider-

(Continued, page 361.)

CHINA AND TIBET

The Transmigrations of an Official Property Soul

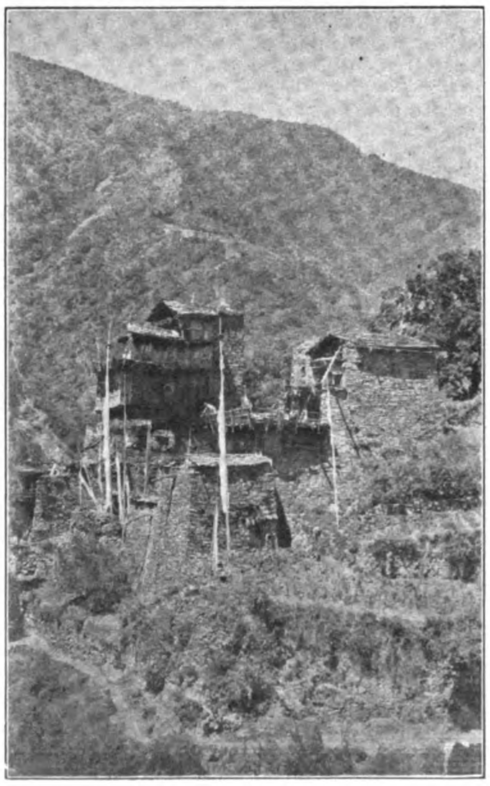
One of the many perplexing problems the Chinese Government has to solve, arises from the overthrow of the Lamaistic power in Tibet, and the proposed substitution thereof by a provincial form of government. The rapid flight of the Dalai Lama last year before the troops of Chao Ehr-feng, and his destitution by the Regent of spiritual rank and titles, apparently simplified the political phase of the problem, but the end is still far off, and through intrigue with other powers, or the fanaticism of his many followers, the Dalai Lama may yet breed trouble for China. Although China's right to direct and approve the election of a Grand Lama has been exercised for over 200 years, the power of removal was never invoked until last year, and in this lies the root of the present trouble. As a matter of fact, China never before had the occasion to exert her undoubted prerogatives in the matter of an unruly Grand Lama, as the Regents at Lhasa were very solicitous in watching over the health of their charges about the time they arrived at an unruly age. At the age of nineteen or thereabouts the different Grand Lama's were ceremoniously escorted to an elaborate picnic on the shores of a lake near Lhasa, and after drinking of the waters returned to the Potala, where a slow sickness always terminated their earthly career. There appears to be no good reason why the water should not have been brought to the palace, and there are a thousand other ways which occur to one in which his soul might be assisted in escaping from its human shell, but the lake story comes from one who has been in Lhasa and ought to know, so in lieu of any other definite or authentic version it may be accepted as near the truth. The present Dalai Lama, however, on arriving at his majority positively refused to attend the entertainment prepared for the benefit of his soul and perversely persisted in eating or drinking only such food as was cooked by his mother who had guarded her offspring during the tender and secure years of his minority. And for the last few years as a matter of further caution, his three young sons were graciously permitted to eat of every dish before their devoted parent would himself partake. And to this careful abstinence in drinking and eating and a divination of the psychological moment to hastily depart on long journeys, the body of the present Grand Lama has retained possession of the soul handed down



THE LAST NEPAULESE MISSION THAT RENDERED TRIBUTE TO CHINA

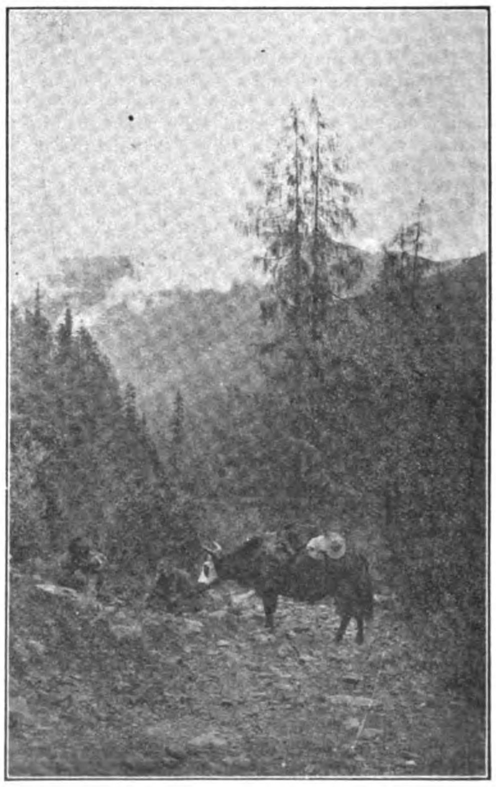
Photo taken in Peking during visit in 1908

ON THE ROAD TO TIBET



MOUNTAINEERS' HOUSE

A LAMASERY



PACK YAK

THE DALAI LAMA OF TIBET (From THE SPHERE.)

The first photograph ever taken of the Dalai Lama of Tibet in his state robes. He is here seated on his throne with the sacred umbrella over his head, in the attitude as for blessing pilgrims. Behind the Lama are the sacred Tibetan pictures painted on silk. This photograph was taken at Darjeeling at the special request of the Dalai Lama.

to it through centuries of incarnations, and it shows no signs or indications of willingness to relinquish it according to the traditions of its office. Naturally he is a very improper, ungrateful, unruly and highly insubordinate pontiff, to those who have regulated the transmigrations in the past. And as he is at present beyond their reach, and under the protection of the Indian Government, it is difficult to see how he can be coerced into separating himself from a soul that is very much needed just now at Lhasa without striking at the root of his religion. The Regent at Peking has stripped him of his rank, but he still retains possession of the soul, which in the eyes of his co-religionists is the main requisite to his high office. China has never accepted the Tibetan Buddhists theory of the transmigration of the soul of the Dalai Lama, which had become perpetually reincarnate on. earth in order to preside over its Church and at the same time rule the "Roof of the World" The migrations were invariably of undue duration, while the soul of the deceased pontiff was seeking a new habitat, in the body of a newly born male infant. Every lama in Tibet discovered miraculous signs in his own offspring. Rival factions fought over their respective nominees and on several occasions disastrous civil wars occurred before the vanquished could be led to recognize the necessary holy signs in the choice of the victors. These constantly recurring menaces to the peace of the State influenced China in supervising the "rebirth" of the Dalai Lama. Over two centuries ago the wandering soul was officially notified to discontinue its promiscuous knocking at lamasery doors and confine itself to where it was ordered by Imperial Edict.

The names of the competing children were placed in a golden lottery urn, and in the presence of the Chinese Amban at Lhasa, under proper and impressive ceremonies in front of the Emperor's tablet, a lama thrust his arm, selected a piece of paper, and the name thus brought to light was that of the future home of the soul. But before the new Dalai Lama was officially declared to be the true reincarnation, his name was sent overland to Peking and the Throne memorialized in his favour. If the Emperor approved the choice, the appointment was ratified, if not, the poor soul wandered around in the astral regions and its reincarnation had to await a year or so pending the return of the mission from Peking and the ordeal of another lottery drawing. It seems quite clear that if the Emperor of China can designate the abode of the soul on earth, by the same token his authority to command its transfer is unquestionable. And so when A-wang lo-pu-tsang-tu-pu-tan-Chiao-Cho-Chi-Chai-wang-Chu-Chio-le-lang-chieh, the present official abode of the Government's property grew unruly and mixed with affairs of state, he was promptly divested of his rank. Long before the Chinese troops entered Lhasa, the Dalai Lama, through his followers on the frontier, knew of the impending storm, and feeling insecure in his temporal power and with a foreboding of rapid dissolution and release of his soul he addressed letters to the various foreign ministers at Peking, requesting aid to resist China. But a few days after the lama dispatch bearer arrived in Peking, Chao Ehr-feng's troops entered the Potala Palace at Lhasa as the Dalai Lama was making a hurried exit at the opposite end, not halting till he reached the safe precincts of the adjoining Empire, only a few miles ahead of his pursuers.

An enterprising Grand Councillor at Peking obtained news of the Dalai's appeal to the Powers and a special meeting of the Council was called. One wise old official took a pessimistic view of the matter, saying that China might lose Tibet, as Britain might think it necessary to restore him to power. That would mean, he continued, a force of British troops being sent to Lhasa to restore order—perhaps to remain there. For the second time in his life the Regent took the bull by the horns, for in a manner almost identical with the dismissal of Yuan Shih-kai, he sprang to his feet, and seizing "the vermilion pencil" wrote out the Dalai's dismissal. "That will end it," he said. "Now he is no longer Dalai Lama." The Imperial Edict of February 25, 1910, is a masterpiece of its kind, and shows the Dalai Lama in his true setting according to Chinese ideas.

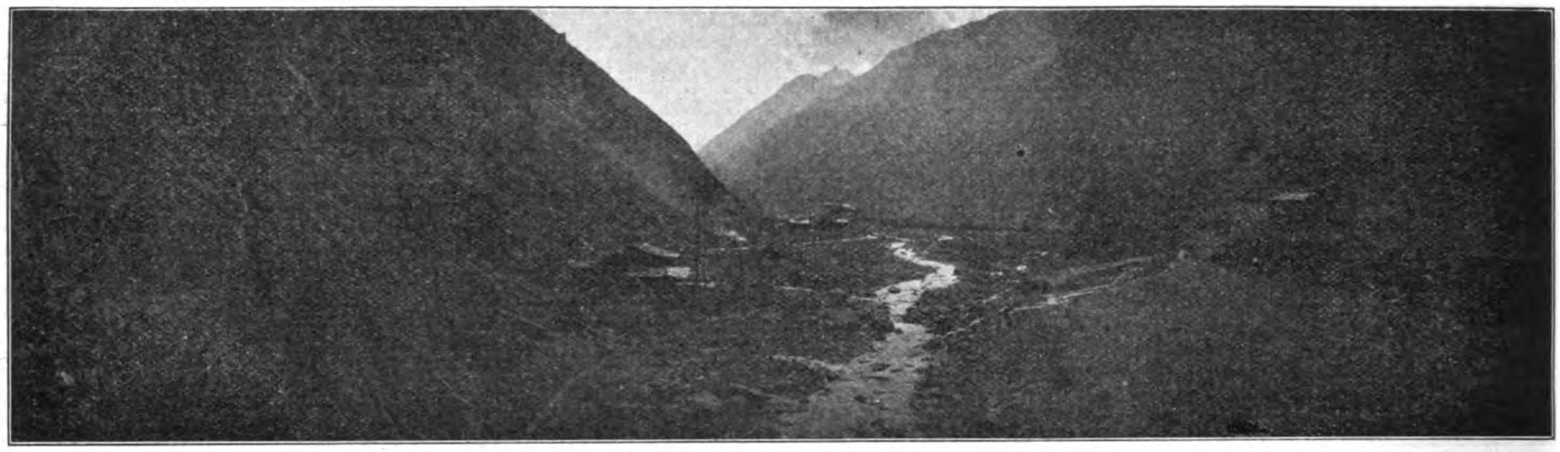
The Edict reads:—

"The Dalai Lama A-wang lo-pu tsang-tu-pu-tan-chia-cho-chi-chai-wang-chu-chio-le-lang-chieh has been indebted for the most cordial bounties and favours from the preceding Reign; and as he must possess a conscience, how much should he have applied himself solely to his canons and tenets, and reverently conformed to former precepts, with a view to propagating the yellow religion? But since he assumed charge of the Treasury and secular government, he has been proud, extravagant, licentious, violent and refractory, to a degree before unknown. He is further unruly and improper in action and takes upon himself to disobey our commands. He maltreats the Tibetan multitude and lightly provokes troubles."

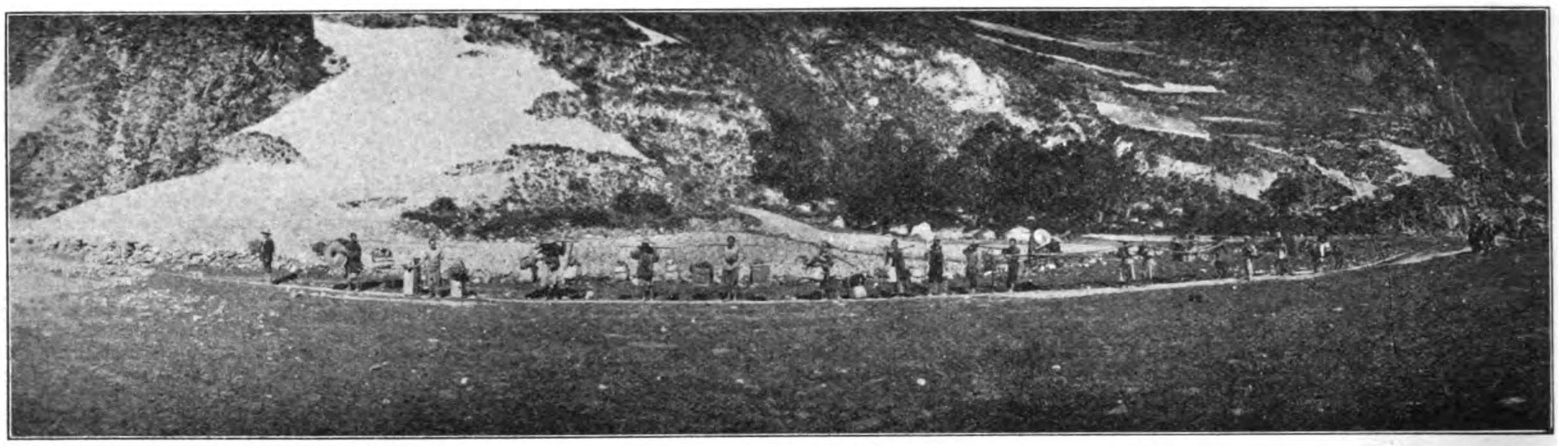
"In the 6th moon, in the 30th year of Kuang Hsu, he escaped quietly, in the course of a rising, and as he incurred notoriety, the Imperial Residents in Lhasa denounced him with truth. An Edict was issued temporarily divesting him of his title. When he arrived at Urga and turned back to Hsining, the Throne, in consideration of his long travel and with the hope that he would reform and make amends, commanded the local officials to show him attentions. When he came to the capital for Imperial audiences, in the year before last, his title was advanced and many gifts were conferred upon him. When he started on his return to Tibet, deputies were appointed to escort him, and though all along the way the Dalai delayed and made vexatious exactions, his action was, in all cases, considerately and indulgently tolerated. It was hoped by overlooking the past to provide for the future and this intention is indeed kind and far-sighted."

"The present entry of the Szechuen troops into Tibet is particularly intended for the maintenance of order, as well as protection in opening ports, and there is no cause for mis-

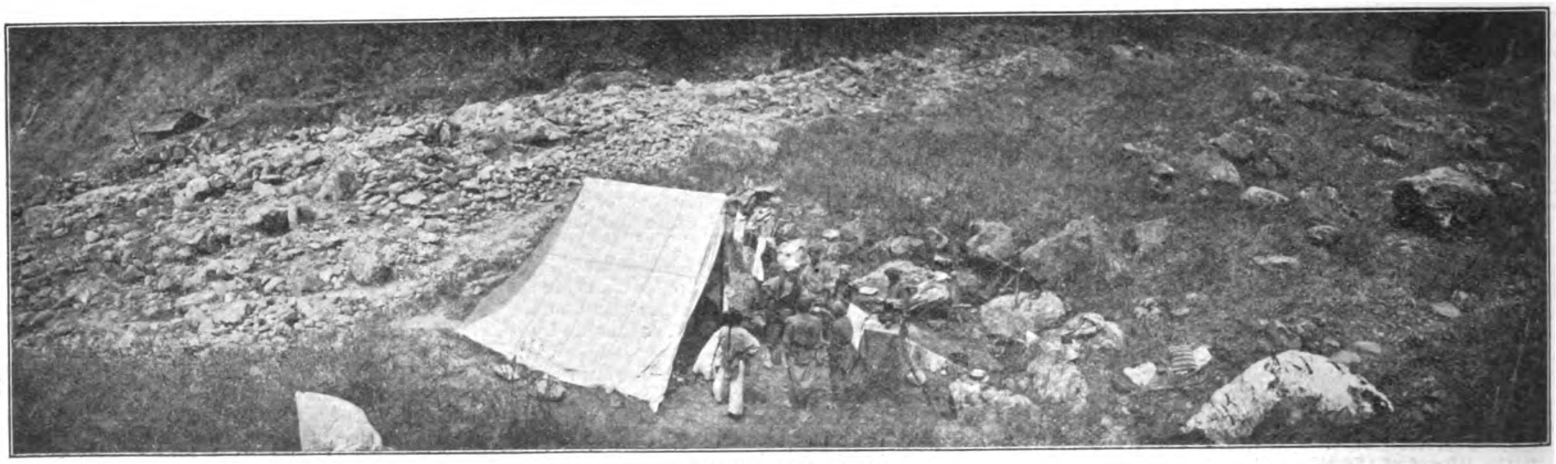
ON THE ROAD



THE ROAD BEYOND TATSIENLU

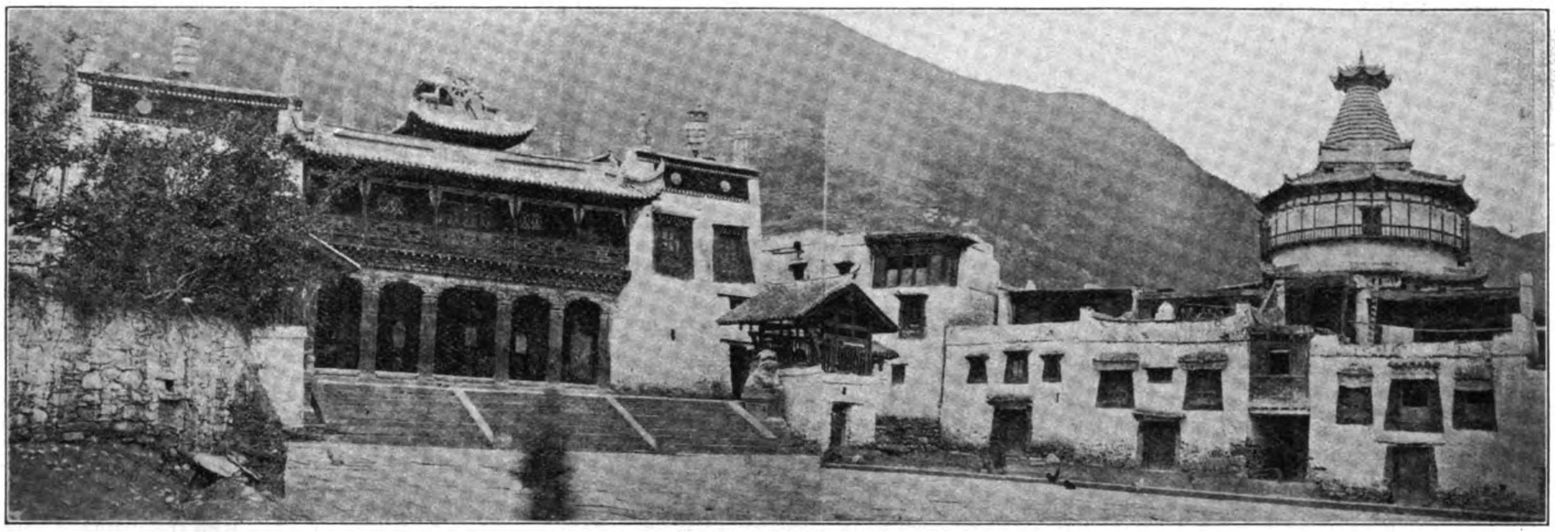


A TYPICAL CARAVAN.

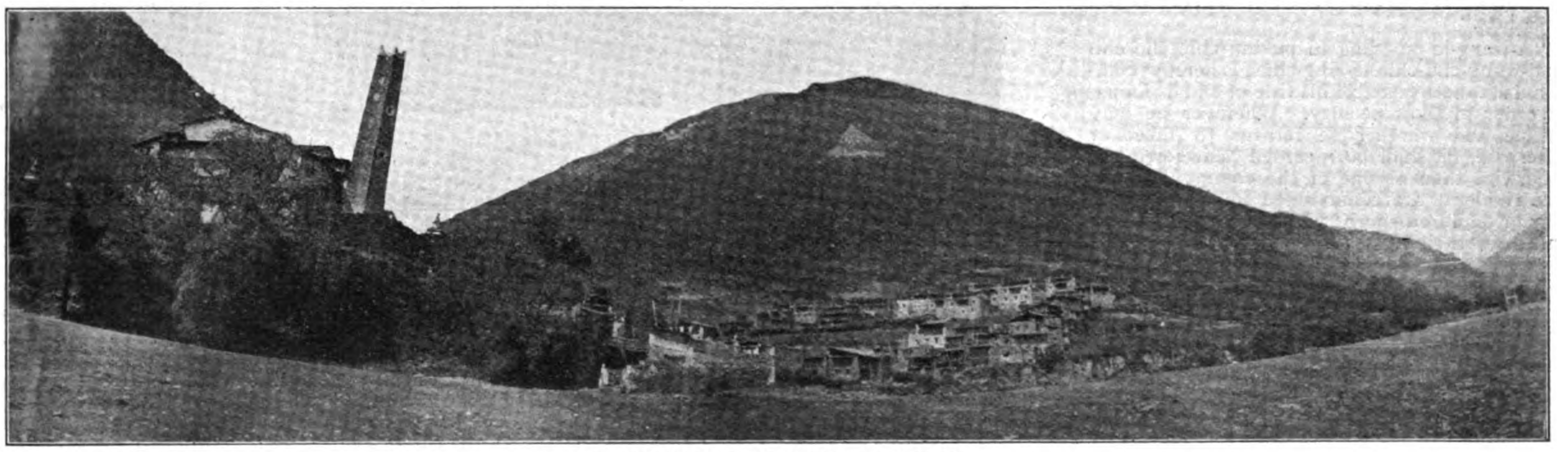


A MOUNTAIN CAMP

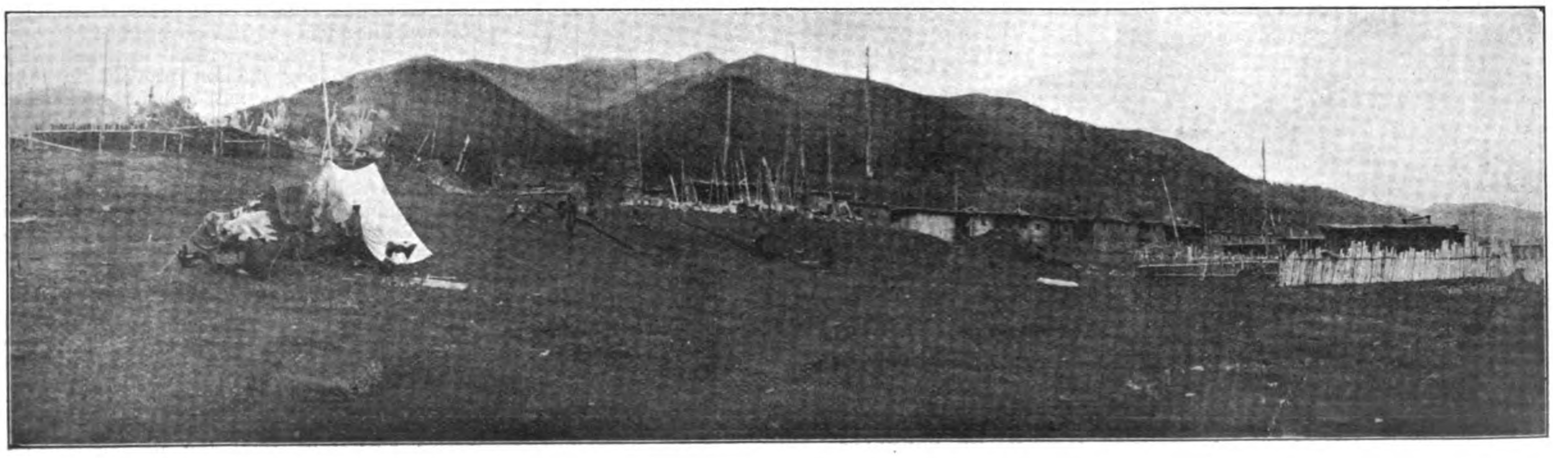
TO TIBET

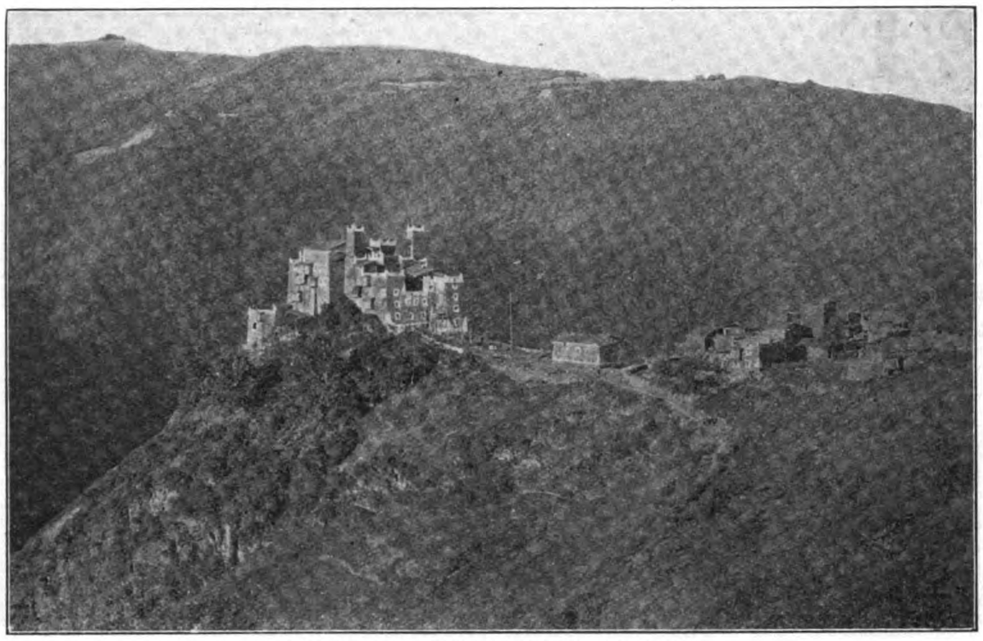


LAMASERY AT LITANG.



A TIBETAN TOWN AND LAMASERY.





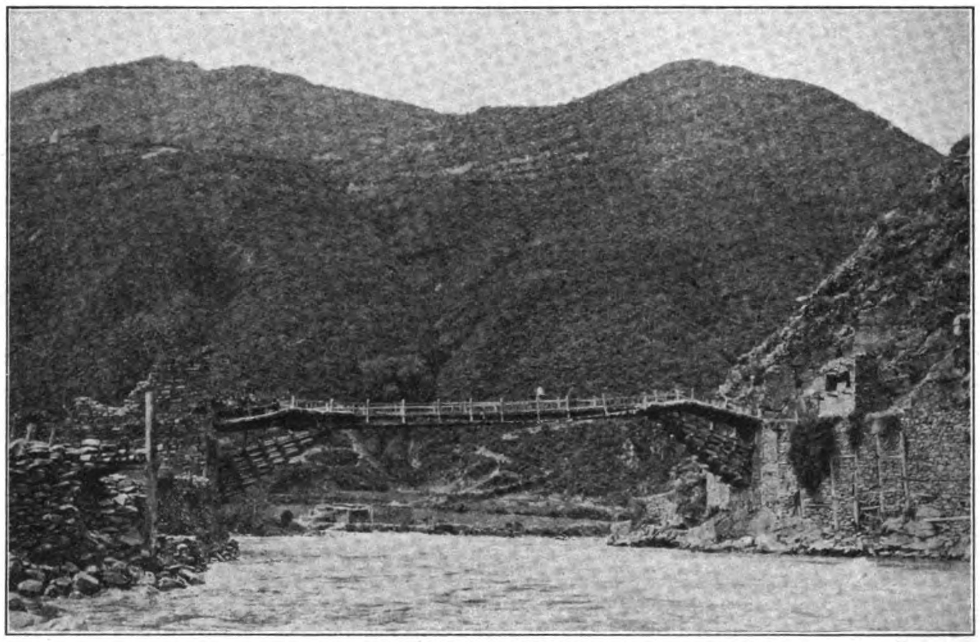
A MOUNTAIN LAMASERY AND FORTRESS

givings to the Tibetans. Who would expect that since the Dalai's return, he should spread false rumours, oppose measures on various pleas, vilify the residents and suspend supplies? In spite of repeated and earnest exhortations, he has paid no heed. We were in receipt of a telegram from Lien Yu and others, reporting that immediately on arrival of the Szechuen troops in Lhasa the Dalai, without reporting, left quietly on the night of February 12, for an unknown destination. We commanded the residents to try to bring him back and make proper arrangements for his provision. No trace has been heard of him. As he is in charge of religious affairs, how could he thus depart repeatedly without authority? We further find that the Dalai is fickle, crafty, deceitful, and alienates his allegiance. This is really an injustice to the bounties of the State and disappoints the hopes of the public. He is ill fitted to be the leader of the Hut'ukhtu, or Saints."

"A-wang-lo-pu-tsang-tu-pu-tan-chia-cho-chi-chai-wang-chu-chio-le-lang-chieh is hereby commanded to be divested of his title of Dalai Lama, in order to show penalty. Wherever he may escape and whether he returns to Tibet or otherwise, he shall be regarded henceforth not otherwise than as one of the common people. The residents are commanded speedily to seek among children born with miraculous signs and draw their names by lot from the 'golden urn', according to former practice. The name drawn shall be created the real hubil'han (re-incarnation) of the preceding Dalai Lamas and application shall be made to Us for bestowal of a proper title and favours, so that the propagation of the canons may be perpetuated and due importance may be attached to religious affairs."

"The Throne is impartial in eulogizing good deeds and penalizing evils. All the priests and laymen in Tibet are our children, and, after issue of this Edict, they are desired to abide by the laws and preserve the peace and good order of the dependency, in order not to outrage our sincere wish to preserve frontier peace and protect the yellow religion."

It will be noted that the Regent employed the word escaped as though speaking of a criminal or conspirator and after divesting him of his rank authorizes a new reincarnation for his soul. But the neighbouring powers who have many Lamaist subjects, and are interested in the abstract matter of Buddhism profess to feel that China's action may result in some disturbance amongst their subjects who recognize the Dalai Lama as their spiritual leader. British opinion is particularly incensed because China failed to consult with the British government before taking such drastic action, and China's hand has been stayed in regulating the further disposition of its wandering official soul.

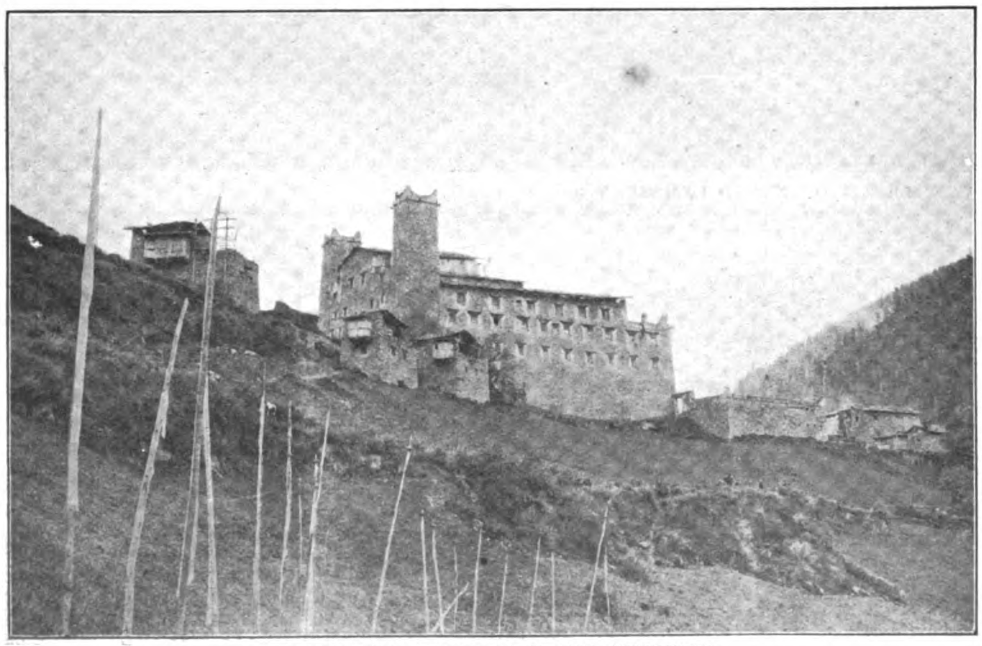


SUSPENSION BRIGDE

In the meanwhile A-wang lo-pu------chieh is quietly sojourning in Darjeeling, receiving deputations of pilgrims from all points of the Indian Empire, and latest advices are to the effect that he will shortly visit England, and carry with him the stage settings of his office. Weighty diplomatic questions arising out of all these events are still unsettled, and a certain section of the British press is strong in its denouncement of the government's policy in refusing to "restore order" in Tibet, while an equally strong opinion prevails in other quarters that China has rightfully exercised her undoubted powers over her own subjects, and that the Dalai only received his just deserts.

Politics and religion never mix, and apparently China should have taken her cue from Great Britain and refrained from interference with the religion of her subjects. But China has been officially regulating this particular religion for over two centuries, imposing her selection of a Buddhist Pontiff long before Great Britain entered the arena of Asiatic politics, or Russia became politically interested in Tibet.

The real point at issue is one that Gilbert and Sullivan or George Ade might handle to better advantage than the diplomats. The



A MOUNTAIN LAMASERY AND FORTRESS

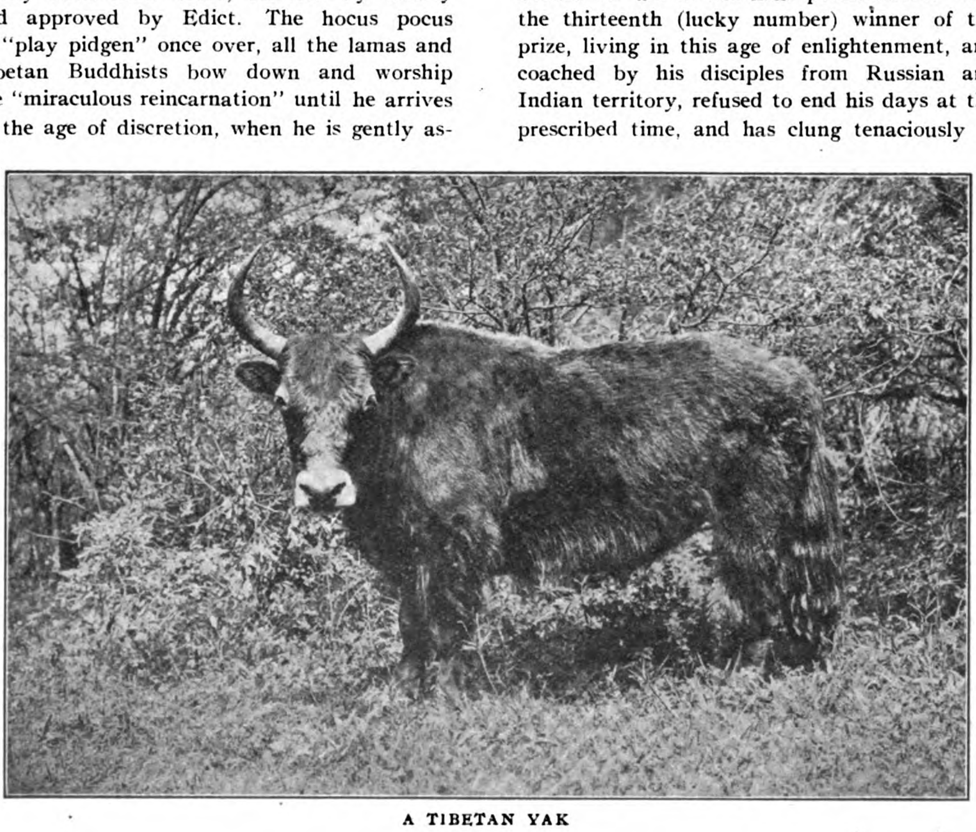
THE TAOTAI OF THE MANTZE MARCHES, KAO TSENG-CHUEH, TAOTAI OF YACHOWFU

H. E. CHO-HA-PU, TARTAR GENERAL AT CHENGTU, SZECHUAN

Chinese Government is the possessor or at least for all practical purposes controls a "soul" used as a part of the stage setting in its government of Tibet. For over two centuries it has bestowed or ordered this soul to take up a duly spectfied residence in the body of some lama's newliy born male child, selected by lottery and approved by Edict. The hocus pocus or "play pidgen" once over, all the lamas and Tibetan Buddhists bow down and worship the "miraculous reincarnation" until he arrives at the age of discretion, when he is gently assisted to peacefully give up the ghost, and the spirit is again officially transmigrated to the next successful winner of the lottery. Twelve Dalai Lamas have come and gone, faithfully playing the game ordered by Peking, shuffling off this mortal coil and leaving the stage property behind for use in the next performance. But the thirteenth (lucky number) winner of the prize, living in this age of enlightenment, and coached by his disciples from Russian and Indian territory, refused to end his days at the prescribed time, and has clung tenaciously to the joys of life, and upset all the traditions of his office, by marrying and taking unto himself many concubines and begetting children and generally conducting himsef in an unholy manner. The owners of the stage soul therefore dispatched the police to capture the evil doer, and compel payment of "the long deferred penalty of office, and the return of their property.

But the culprit ran fast and escaped with the stage settings and is now safe from pursuit. The question arises, has he a right to retain the official soul ordered to abide in him by Imperial Edict? For two centuries the Chinese Emperor has held undisputed authority over this soul in its astral wanderings and designated its abode on earth. But once a soul enters into its incarnation can an Imperial Edict compel it to evacuate the premises until it is released by natural death? If the Dalai Lama had remained in Tibet, this perplexing question would never have arisen; but now, it is different, as the official holder of the soul is safe on British territory. Balked in releasing its property by natural methods, China says that another Dalai Lama will be created and the soul transmigrated without awaiting dissolution, and the Indian Buddhists resent this unheard of interference with the prerogatives of a soul.

A-wang lo-pu may still be the Dalai Lama in the eyes of his many followers, but before the Chinese law he is an escaped official bearing with him the seals of office belonging to the State. But the world will sympathize with his troubles, as it is impossible to return the property without paying the traditional forfeit, or violating the principal tenet of his faith.



A TIBETAN YAK

H. E. WEN TSUNG-YAO,
THE RECENT JUNIOR AMBAN OF TIBET.

The Frontier Region of Tibet or the Marches of the Monntze

H. E. Wen Tsung-yao, the former Junior Amban of Tibet, is now residing in Shanghai and has given several very interesting interviews to the local press on the conditions existing at Lhasa and about the wonderful transformation that has been wrought in frontier region under control of the energetic Chao-Ehr-feng. In a lengthy interview published in the SHANGHAI TIMES, H. E. Wen, who had just returned from the overland trip from Lhasa, through the country ruled by Chao, spoke in the highest terms of the ability of this official.

"The term 'frontier' as used in relation to this particular part of the boundary of China, implies not merely a narrow dividing line—in which sense it is usually interpreted—but a stretch of country a thousand miles long and 250 miles wide, approximately, between Tachienlu and Chiamdo, separating the jurisdiction of the Viceroy of Szechuen from that of the Amban of Thibet. Over all this extensive region the High Commissioner of Frontier Affairs holds undisputed sway, responsible to no one for his actions save his Imperial Master in Peking, and in a minor degree, his brother in Chengtu, H. E. Chao Erhhsun, the enlightened Viceroy of Szechuen. The High Commissioner of Frontier Affairs and the Amban of Thibet, H. E. Lien Yu, act in complete independence of each other, but both are answerable for their administration to the Viceroy of Szechuen and the Government in Peking. The country over which the High Commissioner rules, is an elevated table-land ranging in height from 8,000 feet at Batang, where H. E. Chao Ehrfung has his yamen, to 15,000 feet at Litang, while Tachienlu, 'the gateway of Thibet' as it is termed, is 9,000 feet above the sea-level. The country, which is only now beginning to be developed, was quite wild and desolate when Chao Ehr-fung assumed office. There were no roads, no telegraphs, no communications of any kind, and no crops, save a little roughly cultivated wheat.

"The people, about one million in number, were in a condition of the lowest moral degradation and material misery. Polyandry was generally practised. What women had husbands at all had five or six, brothers as a rule; but vast numbers of women remained unmarried, becoming either inmates of nunneries or menial servants in the households of their more prosperous neighbours. Under these circumstances the population showed every sign of becoming extinct before the lapse of many years, and the few visitors who penetrated the country were invariably impressed by the apparent hopelessness of its prospects. The only satisfactory feature about the people's condition was their fine physique and their agreeable, cheery dispositions under the most depressing conditions. Their superior stature and build are accounted for partly by the fact that the day after children are born their mothers carry them to the nearest stream and plunge them into the water, even in the depth of winter when the temperature is after down to 15 or 20 degrees below zero. Infants which survive this heroic ordeal are then smeared thickly all over with grease and exposed for several hours every day of their young lives in the open air, so that they may grow up strong and hardy and fit to defy all weathers, which the majority of them are certainly well able to do. They are very good-tempered and mild mannered and as their language is the same throughout the entire region and easy for foreigners to acquire—the written language is Sanscrit—they make a very favourable impression upon all foreign travellers that visit the country.

"Prior to the arrival of H. E. Chao Erh-fung to take over the administration of the country on behalf of the Chinese Government, these amiable but ignorant people lived under a system of two-fold oppression. They were oppressed and taxed by the 'native rulers,'—petty local tyrants who were supposed to be answerable in some loose, undefined way to the Government of Lhasa, but who, in practice, were held to account by nobody or nothing but their own sweet will—and they were oppressed by the inmates of the monasteries, which were by far the most numerous and flourishing institutions in the country. Government in the proper sense of the word there was none. Crime went unpunished and unheeded; no attempt was made to develop the country, or to institute public works and the people were utterly neglected, except when the time came round for them to satisfy the exactions of their oppressors. But these seasons came frequently enough in all conscience. Not only had the downtrodden folk to pay taxes to the native rulers on the one hand and the monasteries on the other, but they had to render manual service to both whenever called upon to do so, to provide ponies, mules and yaks for their masters whenever the latter chose to move from one part of the land to another, and to find quarters for the military escorts by which their native rulers were invariably attended upon their travels, all free of charge.

"But the providential advent of H. E. Chao Erh-fung completely changed all this. About five years ago the Junior Amban of Thibet, Feng Chuan, was murdered by Thibetans near Batang and H. E. Hsi Liang (now Viceroy of Manchuria) who at that time occupied the Viceregal seat at Chengtu, acting under instructions from the Government at Peking, selected Chao Erh-fung, who was then the Taotai of Yachowfu in Szechuen, to lead a punitive expedition to the scene of the murder. H. E. Chao displayed such energy and ability in the conduct of this mission, that he was appointed High Commissioner of Frontier Affairs and entrusted with the duty of introducing civil order all along the lawless marches between Szechuen and Thibet. That is the region over which he has ever since exercised a wise, enlightened rule, over which in fact, he has reigned a veritable Lord of the Marches. He found it a howling wilderness and he has transformed it if not quite into a paradise, at least into a very tolerable place of residence for the million odd people who constitute its population.

"It would be difficult to describe in a few columns of a news paper a fraction even of the changes for the better which have been effected during H. E. Chao's administration. The most striking and important perhaps are those which belong to the department of communications. When he arrived there were no roads in the country. There is now a regular network of excellent highways throughout the entire region, carefully levelled, well constructed they zigzag up along the mountain sides, adown the slopes and straight across the wide flat stretches comparing favourably in every detail with the best roads that the British have made on the Indian side of the frontier. The only particular in which they are not quite up to the British standard is this, that whereas the British roads running along the Himalayan precipices are all protected with stout iron railings on the open sides, Chao Erh-fung's highways have not yet been provided with safeguards of this description. But the provision of this additional improvement is a matter of only a little more time. The bridges, which are very numerous, are all substantial, up-to-date structures, of wood and stone, built, to all appearance, to last for centuries. These roads and bridges show evidence of the highest engineering skill and reflect the greatest credit on their designers, Chinese engineer officers, and the Chinese soldiers who carried out the actual work of construction. The chief of these highways is that from Chiamdo to Ta-

FAR EASTERN TRADE SITUATIONS

(Continued from page 353.)

able increase in comparison with those of the previous year. Owing to the failure of the rice crop in some districts, caused by the heavy floods of last summer, large imports of rice have been contracted for, but full crops of other kinds have been harvested. Throughout the year the silk market was active and, though producers had to accept rather lower prices, the number of bales of raw silk exported during 1910 was by far the highest on record. Money still remains cheap in Japan, commercial discounts ruling as low as 4 per cent. p. a. during the greater part of the year.

"So far as Hongkong and South China are concerned the slow but gradual improvement in trade was maintained and the Chinese New Year settlement passed off quietly both here and in Shanghai. Prospects for the present year look promising and I am glad to say that there is a better feeling in the shipping world, though at the moment the plague in the North casts an element of uncertainty over the immediate future. We all sympathise with China in this trouble that has come upon her in the North and which is causing not only serious loss in revenue and trade but also in the lives of her people. Energetic measures are being taken to stamp out the disease and advices indicate that its spread is being arrested. Let us hope that with the advent of warmer weather the scourge may disappear and conditions in Manchuria assume a normal state.

"In August last I referred to the crisis in the native money market in Shanghai and the consequent restriction of facilities by the native banks. I am glad to be able to tell you that trade conditions at that port now show some improvement, although native dealers still experience difficulty in financing purchases. Crops, however, have been good all round, so we may expect to see easier conditions ruling in the near future. The heavy stocks of piece goods, which for so long burdened the markets in Shanghai and in the North, have been moved off; figures are greatly reduced, some of the principal lines to a point lower than has been seen for the last 8 years. Orders, tempered to some extent by the high level of manufacturers' prices, are going forward, and we think we have good reason for anticipating a much healthier trade than we have seen for a long time. This improved state of affairs has, to a certain extent, been lost sight of by the public at large as it was overshadowed by the financial crisis which followed the collapse of the rubber boom in the Shanghai market. This crisis undoubtedly retarded the general recovery which was beginning to take place, but by the prompt aad broad-minded manner in which the situation was dealt with, its effects were fortunately minimized and trade was enabled to be carried on comparatively unhampered."

The Chairman's comment on the railway development problem of China and especially his reference to the elimination of spheres of influence in dealing with foreign loans was most gratifying to those who have been following the course of events during the year. He said:

"In the course of his remarks to you at this time last year, your Chairman referred to the state of railway development in China, to its importance bearing upon the material progress of the country of those economic interests which so closely affect this Bank, and to the present tendency of foreign governments and foreign financiers to lay aside their political rivalries and selfish doctrine of spheres of influence for the more enlightened policy which aims of friendly combination in the pursuit of interests which are common to all.

"A review of the past year suggests nothing which calls for a modification of those views; indeed they have received striking confirmation in the recent accession of a powerful American financial group to the international combination, in which British, French and German interests have for some time past worked harmoniously together. The aims of this combination, which are to assist China in reform along sound financial lines, free from political or territorial designs for any sort, receive added strength and support from the known views of the American Government; and we may feel sure that the Chinese Government will presently realise that the solution of the difficult financial problems by which it is now confronted can best be secured by co-operation with those aims."

THE FRONTIER REGION OF TIBET OR THE MARCHES OF THE MONNTZE

(Continued from page 360.)

chienlu. As there were no roads in the country prior to the advent of H. E. Chao Erh-fung, neither naturally were there any resthouses, but these the energetic High Commissioner has also now provided. Comfortable buildings, on the lines, to some extent, of the famous Indian *dak* bungalows, are now to be found at short intervals all along the highways. They are free to the use of all travellers without charge, save the price of fuel and the small *cumshaw* which is expected by the caretakers, and which, we need hardly say, is invariably forthcoming although its payment is by no means compulsory.

Another important improvement introduced by H. E. Chao Erh-fung, is the telegraph. Prior to his arrival there was no telegraph in the country, but now, thanks again to the vigour of his administration, telegraphic communication may be had from all the larger centres, expeditiously and easily with all parts of the world.

Education and the encouragement of industry are also matters which have deeply engaged His Excellency's attention. After what has already been written we need scarcely refer to the utter absence of schools along the frontier prior to the advent of the High Commissioner. There are now 75 institutions of this character flourishing in the region which he administers—including a proportion attended only by girls. In the industrial department he has opened woolen mills and tanneries, and engaged experts to teach the people weaving and tanning, which in a country so rich in flocks and herds as the Tibetan frontier, are industries with the rosiest possible future before them. He is also using every effort for the promotion and improvement of agriculture. Before he arrived the only crop cultivated was wheat, in few, sparse patches. The Tibetans ate absolutely no vegetables. But now, His Excellency has introduced the cultivation of rice, which besides proving a great boon to the Chinese soldiers and settlers in the country, is also being gladly welcomed by the Tibetans as providing a most welcome addition to their former meagre diet of badly baked wheaten cakes.

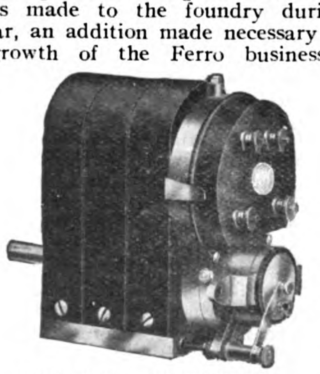
One of H. E. Chao's first proceedings in the country was to abolish the regime of the "native rulers." These predatory gentry he treated with scant ceremony, sending them packing with small pensions, and replacing them with specially selected Chinese officials under whom the people now acknowledge that they are better off and happier than ever they were before in the whole course of history. He also sternly forbade the monks to levy any more taxes and gave the people to understand that they were no longer under any obligation to render free service to monks or native rulers or anybody else. In place of the taxes which they formerly paid to a multitude of oppressors they are now called upon to pay their new masters only one small tax (collected "in kind") on arable land and a fee of one rupee for every pony or mule they possess, and half a rupee for every yak or cow. The "commandeering" of these animals, which was formerly freely practised, is no longer permitted, the Chinese authorities paying half-a-rupee per day for every beast hired from the people for transport purposes.

The practice of polyandry is being firmly discouraged. Every couple about to marry must now appear before a Chinese official and register the contract, otherwise they will receive no help or protection in case trouble should arise between them after marriage. Everybody also is now given a Chinese surname in addition to his original Tibetan name and unions between people of the same surname or belonging to the same clan are strictly prohibited. The people are taking very kindly to the new institutions—to the list of which we may add the practice of vaccination, which has been introduced with the very best results, although it was only after His Excellency had bared his own shoulder and shown them that he himself had undergone the operation that the people would consent to submit to the process—so that in a few years the indications are they will be as well-ordered, well-contented and prosperous a population as any to be found within the confines of the Chinese Empire.

The author of this remarkable transformation is the younger of a famous pair of brothers, the elder of whom occupies the exalted office of Viceroy of Szechuen. The High Commissioner is now 65 years of age, a tall, hale, strong and energetic man with nothing in his appearance to indicate that he has passed the prime of life, except his hair and moustache which the labours and anxieties of the past five years have completely whitened. He is a native of Peking, a man of the most progressive convictions, and one from whom,—great though his services to his country have been already,—even greater things are confidently looked for in the future."

Ferro Machine & Foundry Co. Increases Its Facilities

We are showing on this page an illustration of the Ferro Company's enlarged plant at Cleveland. In the foreground is the fine new office building that is to house the office force which looks after the largest marine engine business in the world. The big three-gabled-roof building in the background is one of the additions made to the foundry during the past year, an addition made necessary by the rapid growth of the Ferro business. Just behind the water tower is the new core room, generally conceded to be the finest of its kind. Many engineers and foundry men have visited the Ferro plant especially to examine it.



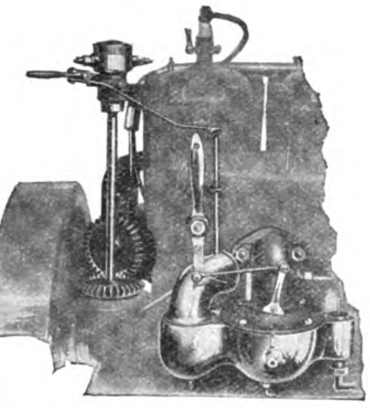
HIGH TENSION MAGNETO.

Until last month the administration offices of the Ferro Company were located in the down-town section of Cleveland. The factory is in another part particularly adapted for such an industry, where it is nearer the raw material market and the shipping facilities are such as to cut down expenses and enable the Ferro Company to put more value into its engine. Heretofore this arrangement worked very well but the rapidly growing business with its attendant increase in the number of details to be looked after made a change absolutely necessary. This month the downtown force will move bag and baggage out to the factory.

The new building is a large two-storied one of 15,000 square feet. A careful study of some of the largest offices in the country was made and the Ferro office laid out so as to facilitate in every way the rapid handling of the business. The most modern improvements and equipment are installed throughout.

Another addition during the past year—that of 30,000 square feet of foundry space is indeed a boon to the Ferro people. With a larger foundry and the finest and most complete core room in the world, it is now possible to give the other departments more "elbow room," so that there is plenty of lee-way in case orders should pile up faster than expected. With this enlarged factory and the building of motors for stock begun several months earlier this year the Ferro people can promise immediate delivery on all orders for 1911 motors.

The Ferro factory with these additional 70,000 square feet, now covers an area which makes it by far the largest plant in the world devoted to the manufacture of marine engines. It gives employment to over one thousand two hundred people. All the machinery, a large percentage of it of special design for the building of Ferro engines, is electrically driven



FERRO TIMER-CARBURETOR CONTROL

Many visitors to Cleveland make it a point to visit the plant. An experienced man shows them through the factory and explains the careful construction of Ferros from blue print to finished motor in one plant.

The Ferro Motors for 1911.—The Ferro engine for 1911 embodies some important new principles and refinements. They have been thoroughly tried out and are sure to be of utmost interest to the motor boating fraternity. These improvements, while they go a great way towards increasing the efficiency and reliability of the engine, take away none of that simplicity for which the Ferro has always been noted. Space does not permit us to go into detail regarding them, but the brief accounts of the two that follow will give one a fairly good idea of what is being built.

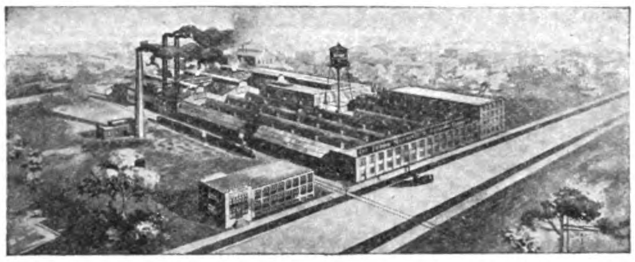
The Timer-Carburetor Control—A New Idea.—In the 1911 Ferro timer-carburetor control the makers of the Ferro engine seem to have a solution of the carburetor problem. An ingenious butterfly valve arrangement working in perfect unison with the timer not only overcomes the drawbacks and annoyances commonly encountered with other carburetors, but increases the efficiency of the engine and makes this the most perfect control ever devised for a gasoline motor.

The simple butterfly valve is contained in an elbow attached to the auxiliary air valve of extra large diameter and is automatically operated by a rod from the timer. As the spark is advanced or retarded, this valve is so adjusted as to allow just the proper amount of air to enter the mixing chamber of the carburetor and form a mixture of gasoline vapor and air of the proper proportions to meet the requirements of the motor. The extra large auxiliary air valve means a quick acting carburetor which in turn gives a quick responding motor.

The timer-carburetor control is positive and aside from permitting of a motor of extreme flexibility, one that is easy to start, has a number of distinct advantages. Backfiring, such a big annoyance and drawback, is absolutely eliminated. Ferro motors have been run at high speed, throttle "wide open," instantly changed to slow speed and run that way without a semblance of a sputter.

This control has been applied to all the systems of ignition employed on Ferro motors. The same good results are obtained with the high tension magneto as with the battery and make and break ignitions. The Ferro is the only motor today that has this remarkable feature.

Ferro Applies High Tension Magneto.—System to Two-Cycle Marine Engines.—The motorboatist has often envied the man in the automobile because the latter enjoyed the advantages of high tension ignition. This no longer need be the case. The Ferro Company has made another departure from the regular order of things and applied the high tension magneto system to its product, the first time that high tension ignition has been generally applied to a two-cycle marine engine, and furnished as regular equipment



BIRD'S-EYE VIEW FERRO MACHINE & FOUNDRY CO.'S PLANT, CLEVELAND, O , U. S. A.

Both the magneto and what little wiring there is, together with other parts of the ignition system, such as spark plugs, etc., are so well protected that they are absolutely waterproof and short-circuit proof. A special waterproof covering of thick rubber protects the magneto. The wires, aside from being heavily insulated, are run through brass tubing up to the spark plugs, themselves protected by porcelain covers.

The advantages of the positive hot dynamic spark of the high tension magneto, such as increase in the power of the engine and economy of fuel consumption, are too well known to be dwelt upon to any extent here. Carrying batteries, which always deteriorate, is made unnecessary, for it was found that with this magneto the engine can be started on the first turn of the crank.

High tension ignition can be obtained on Ferro motors at a small cost over batteries and coil and their ultimate cost will be lower. Deducting the cost of batteries, coils, etc., of the regular ignition equipment and the cost of constant replacement, and after adding to the result, cost of the magneto system, it will be found that high tension ignition necessitates but a very small additional outlay. This will be more than offset and forgotten when the after-saving and increased enjoyment are taken into account.

CONTRACTING NEWS

DEPARTMENT OF FINANCE, BANGKOK, SIAM.—For purchase of 360 tons of demonetized bronze coins of Siam chiefly atts and two-att pieces, 85 grains and 173 grains respectively. Also comprises proportion of half att and four att pieces. All coins approximately 95% copper, 4% tin and 1% zinc. Proposal must be expressed in pounds sterling and guarantee that coins must be defaced, cut, chipped or melted by successful bidder. Bids must be addressed Minister of Finance, Bangkok, and marked "Tenders for purchase of old bronze coins" and submitted on or before April 18, 1911.

Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., April 10, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

35,000 pairs of cotton socks.

Blank proposals may be obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

PROPOSALS FOR FROZEN FRESH BEEF AND MUTTON.—Headquarters Philippines Division Office Chief Commissary, Manila, P. I. December 31, 1910.—Sealed proposals, in triplicate, subject to usual conditions, will be received at this office until 11 o'clock a. m. April 5, 1911, at which time and place they will be opened in the presence of attending bidders, for furnishing and delivering about six million six hundred thousand (6,600,000) pounds of frozen fresh beef and two hundred thousand (200,000) pounds of frozen fiesh mutton to the Subsistence Department, U. S. Army, at Manila, P. I., during year ending June 30, 1912. The contractor will be required to pay all customs duties. The United States reserves the right to decrease the amount advertised for, upon reasonable notice to the contractor, or to increase the amount with his consent. Each proposal must be accompanied with a bidder's guaranty in the amount of $20,000 or with certified check for that sum on a bank of approved standing in Manila. The bidder to whom the contract is awarded will be required to give bond. Blanks and full information furnished on application to this office or to nearest United States Consul. Envelopes containing proposals must be marked: "Proposals for frozen fresh beef and mutton for fiscal year 1912, to be opened April 5, 1911," and addressed to the undersigned.—D. L. BRAINARD. Lieut. Col., D. C. G., U. S. Army, Chief Commissary.

BUREAU OF CONSTABULARY.—Office of the Chief Supply Officer. Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., May 15, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

2,000 woolen blankets.

Blank proposals and information as to size and weight of blanket may be obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

PROPOSALS FOR COAL.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., January 7, 1911. Sealed proposals, in triplicate, subject to the usual conditions, for furnishing approximately 65,000 tons of coal to the Quartermaster's Department, U. S. Army, during the Fiscal Year 1912, will be received here until 11:00 A. M. May 8, 1911, and then opened. Information and blank forms furnished upon application. F. G. HODGSON, Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

PROPOSALS FOR PUMPING MACHINERY.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., March 7th, 1911. Sealed proposals, in triplicate, subject to the usual conditions, for furnishing Pumping

FAR EASTERN RAILWAY NEWS

INDO-CHINA-SIAM CONNECTIONS.—The construction of the Saigon-Baltambang Railway and its extension to the Siamese frontier where it will ultimately connect with an extension from Petriew is the subject of much favorable comment in the Siamese press. The cost of the Indo-Chine project will be covered out of the loan of 100,000,000 francs projected by Governor General Klobukowski for public works. With the completion of the Indo-Chine and systems together with the Peninsular Railway all Malaysia will be put in touch with China by rail.

THE MEKLONG RAILWAY Co. Ltd.—The report of the directors for the year 1910 gives little information beyond the actual results in profits for the year. The gross income was Ticals 310,760.75 and the expenditure Ticals 109,846.89 showing a very low percentage of cost for operating. After allowing Ticals 63,660 for interest concession redemption and depreciation, Ticals 137,254.44 represented the net profit for the year. Including Ticals 10,382.45 forward from previous account there were Ticals 147,636.89 available and the following distribution was made:

The Directors propose to deal with this amount as follows:

(1)	To pay a dividend of 5%: Tcs.	111,500.00
(2)	To pay Directors' fees:	5,000.00
(3)	To pay Manager's bonus:	5 575 00
(4)	To place to Contingencies Fund:	9,000 00
(5)	To place to Statutory Reserve	6,333.97
(6)	To carry forward to next year:	10,227.92
	Tcs.	147,636.89

SUPPLY OF INDIAN RAILWAY MATERIAL.—Messrs. Geo. Cooper and Sons, Limited, England, have a large order for the supply of "French" screw spikes for permanent-way to the South Indian Railway. Messrs. Jas. Reid and Co., Ld., are supplying the same railway company with a quantity of fishbolts with nuts and washers for the construction of the Dharmapuri-Hosur extension. The Stanton Iron Works Company, Limited, had a contract for the supply of cast iron pipes and cocks to the South Indian Railway; and Messrs. Blakeborough and Sons, Limited, for pillar water cranes for the D. H. E. The materials required for the second track on the Delhi-Jumna Bridge and Allahabad-Jumna Bridge have all been ordered from England by the East Indian Railway. Messrs. Pope's Electric Lamp Company, Limited, England, have supplied the East Indian Railway with three thousand of their incandescent electric lamps. The General Electric Company, Limited, have also supplied the electric department of this railway with a quantity of their lamps, globes and shades. The Oilbath Axle-box Fittings and Engineering Company, Limited, England, had an order, from the Bengal-Nagpur Railway Company, for the supply of 100 of their axle-boxes and 2,000 axle-box covers. Messrs. John Spencer and Sons, Limited, are supplying the same railway with four crank axles for locomotive engines. Messrs. Geo. Cooper and Sons, Limited, have an order from this railway for the supply of 22 tons of fishbolts with nuts and washers, and 88¼ half tons of "French" coach screws. The East Indian Railway Company have placed a large order with the Consolidated Brake and Engineering Company, Limited, London, for the supply of a number of vacuum-brake fittings.—*Railways and Shipping*.

THE ANTUNG-MUKDEN RAILWAY.—The *Japan Mail* states that this railway has made progress some twenty per cent. in excess of what was estimated as feasible in the past year, so that it is expected to be running through by the end of this year, about six months before the completion originally contemplated. More than two-thirds of the great tunnelling work through the Fuchinlin Range has already been completed, a total of 1600 yards, leaving another 600 odd yards to finish the tunnel, which the Japanese have been drilling at the rate of four yards a day. Another tunnel, exceeding 1000 yards in length has progressed with equal rapidity and only a few hundred yards remain to complete it.

THE SUNNING RAILWAY.—Writing from Hongkong, Consul General Anderson calls attention to the prospect of the early completion of the extensions of this line to Yeunkong on the west, Kongmoon on the east and to Fatshan and says:

"I am informed by the president of the company, Mr. Chin Kee Hee, who was for 43 years engaged in railway construction work in the Pacific Northwest of the United States and had much to do with successful construction of some of the Northern Pacific Railway, that practically all the capital for the extension has been secured, largely from Chinese in the United States, and that the construction of the extensions will be pushed as heretofore. Incidentally it may be stated that orders for railway cars and materials have recently been placed by him in the United States.

"In some respects the Sunning Railway is the most promising line in all China. It was capitalized, planned, engineered, and constructed by Chinese, without any foreign help whatever. If it has technical faults and is not run altogether in accordance with foreign ideas, it is nevertheless an effective line, prosperous and well managed, so far as results can show, and is a standing example of what Chinese effort and Chinese talent will accomplish in China in the near future."

PAKNAM RAILWAY CO., LTD.—The following report with recommendations of the directors for the half year ended December 31, 1910, was adopted at the regular meeting of the company:

	Ticals
Gross Receipts	73,970.31
Expenses	0,501.70
Leaving a profit for the half-year of	43,477.52
Added to the Contingencies Fund	100.co
	43,377.52
Balance from half-year ended 30th June 1910	2,666.47
Available for distribution	46,043.99

This amount your Directors recommend should be apportioned as follows:—

	Ticals
By paying a dividend of 6% absorbing	30,000.00
,, Depreciation	6,000.co
,, paying Directors' Fees	4,500.00
,, Compensation Acting Manager	1,750.00
,, paying Auditor's Fee	400.00
,, paying Manager's Bonus	500.00
,, paying Staff Bonus	500.00
,, carrying forward to next half year	2,393.99
	46,043.99

The total dividend rate for the year on new capital was 15% and on old capital 18.75%.

JAPAN'S STATE RAILWAYS.—From the last year 1904 05 previous to Nationalization, to 1909-1910 the total receipts have increased from 53,578,000 yen to 80,665,000 yen and the ratio of expense to receipts increased from 42.8% to 50%.

PLAGUE AND RAILWAY TRAFFIC.—The South Manchuria Railway has issued the following circular:

Since the outburst of the plague, necessary changes for the prevention of the epidemic have been adopted on our service.

The following is the actual state of the passenger traffic for the present on our line and also on the connecting lines:

3 Class Chinese Passengers.—3rd class Chinese passenger traffic has been totally suspended for the time being for both the North and South bound trains.

IST AND 2ND CLASS CHINESE PASSENGERS. No Chinese passengers are allowed to travel on our Express trains excepting such 1st class passengers as specially granted by the Traffic Manager. 1st class Chinese passengers travelling through from Europe are dealt with the same as those specially granted by the Traffic Manager and are allowed to take our connecting Express trains on other trains than Expresses. 1st and 2nd class Chinese passengers may travel but on separate cars and only when they obtain special permission of the Station Master concerned.

Mukden Antung Line.—1st class Chinese passengers are carried, should they be allowed by the Station Master.

Korea Railway.—All passengers from China are subjected to five days' detention at New Wiju.

Imperial Railways of N. C.—Passenger traffic from Mukden to Peking has been totally suspended, the traffic for the opposite direction remaining as usual.

Chinese Eastern Railway.—The Russian Railway has suspended 3rd and 4th class passenger traffic.

Machinery to the Quartermaster's Department, will be received here until 11:00 a. m. March 24th, 1911, and then publicly opened. Information and blank forms furnished upon application. F. G. Hodgson. Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

CHINKIANG MUNICIPAL COUNCIL.—(a) Erection of a Water Works plant for the purpose of providing the Concession and immediate suburbs with an adequate supply of water.

(b) Erection of a Water and Electric Light plant combined for the purpose of providing the Concession and immediate suburbs with an adequate supply of water and light.

Sealed tenders will be received by the undersigned not later than 4 o'clock p. m. on Thursday, March 30, 1911, and should be marked "Tender for 'Water Works' and or 'Water Works and Light Plant.'"

The Council does not bind itself to accept the lowest or any tender, or to pay any expenses which the contractor may incur in tendering. The contractor whose tender is eventually accepted will be required to give satisfactory security for the due performance of the contract.

PROPOSALS FOR HANDLING GOVERNMENT CARGO.—Headquarters Philippines Division, Officer of Chief Quartermaster, Manila, P. I., February 20, 1911. Sealed proposals, in triplicate, subject to the usual conditions for furnishing all Stevedores, Laborers, etc., necessary for handling Government Cargo offered by this department at Manila, P. I., during the fiscal year 1912, will be received here until 11:00 A. M., March 20, 1911, and then publicly opened. Blank forms and information furnished upon application. F. G. Hodgson. Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

PHILIPPINE MINING NEWS

CONSOLIDATION OF PARACALE INTERESTS.—Negotiations leading to the consolidation of the mining interests of Paracale, with a view to more general economic development is reported to be progressing favorably. So far as can be learned all the different mine owners with the exception of the Paracale Extension have consented to the consolidation proposal and the promoters are sanguine that this valuable property will also be secured. The Paracale Extension, however, has been in the hands of different parties under option previously, but for one reason or another the deals fell through. Three favorable reports have been made on the ground and the lowest average placed the values at 30 cents gold per cubic yard approximately. The claims cover about 230 acres and at least 190 have been proved up.

As previously reported in these columns, a specially designed dredge with a capacity of 60,000 cubic yards a month was recently designed by Engineer Payne for an option holding company. The dredge was ordered, a deposit made and work of construction begun at Dunedin, N. Z., but the option was abandoned.

It is understood that Mr. Payne's design was approved by Mr. Hanlon, the American expert who last tested the ground, but he added some recommendations with respect to special gold saving devices adapted to conditions which would result in higher percentages being secured.

The recognition by American experts that the New Zealand dredge is mechanically as good as any other and that with the provision for gold saving devices adapted to the natural conditions it will give satisfactory results has been received with much gratification by those interested in Philippine mining.

It is now acknowledged that had expert advice been followed in respect to gold saving devices when the installations of New Zealand Dredges were made in Paracale that instead of the unsatisfactory results in loss of values, delays occasioned by poor equipment, etc., large dividends would have been realized almost from the beginning.

It is known that the promoters of the movement for the consolidation of Paracale interests propose benefiting from the experience of the pioneer operators and will take the pains to guard against repeating their errors.

THE PHILIPPINE DREDGE.—The news from the Malaguit River for the month has been most encouraging. Those who have followed the fortunes of the Risdon dredge in the Paracale District where an attempt was made to utilize it on ground to which it was far from being adapted, will be glad to learn that during January and February over 200 ounces a month were saved and a net revenue realized of $2,000 gold each month. This gives renewed courage to the owners of the ground and especially to Judge Ingersoll whose personal sacrifices and tenacity of purpose when things looked their blackest, made this outcome possible. When it is remembered that the Risdon dredge is not suitably equipped with the proper saving devices and that a large percentage is lost, her record for the last two months is remarkable and confirms our confidence in the values in the Malaguit claims. As more effective methods and better administration feature the direction of gold dredging in Paracale and Malaguit, all doubt as to the future of those districts with respect to placer mining will have been dispelled.

THE SAN MAURICIO MARE'S NEST.—The Philippine shareholders in this company are not satisfied with the excuse given by Manager Bridgeman for closing down this property and, according to information from a most reliable source, Philippine capital is prepared to purchase a control and expend a sufficient amount to demonstrate that the ore is there in sufficient quantity and of satisfactory values to warrant further development and operation of the plant.

The charge is made that the administration of this property was not of a character that would make a success of a much richer property. The flooded state of the mine makes it impossible at the present time for those having faith in the property to make the necessary investigation, but that it will be made if the Philippine shareholders secure control is certain, and if they cannot secure control the matter will be taken to the courts for adjudication. This latter course will be followed, only, when every other means are exhausted to straighten out the present tangle, and behind it all is a remarkable expression of confidence in the property under proper direction. The majority of the shares are held in New York City and we understand that negotiations are under way to make the purchase.

THE GUAMAS GROUP.—It will be remembered that an option on this property was secured by the Philippine Exploration Co. The company put up ₱50,000 for it and it now appears that no definite date was named in the agreement for the option to become forfeit. With the closing down of the San Mauricio we understand that the Exploration Company decided to abandon their purpose to instal the dredge on these claims for the time being. Lately we learn that Shanghai promoters have circulated a private prospectus with the purpose in view of taking over the option on this property and proceeding to instal this dredge. We have not learned with what success this flotation has been attended.

MASBATE COAL.—The deposits owned by the Masbate Exploration & Development Co. have been receiving some attention of late. Recent analyses are reported to have been very satisfactory. The owners claim that it will rival the Australian product. An effort is being made to interest American capital.

MILL FOR NALASVETAN MINES.—The owners of property at Nalasvetan, Camarines, have purchased a small stamp mill which will soon be installed. Development work on this property has been in progress for over two years.

PROMINENT MINING ENGINEER VISITS PHILIPPINES.—Mr. F. G. Cole, who has been associated with leading mining interests in Siberia, China, Saghalien, Sumatra and Malaysia, has been enjoying a vacation with relatives in Manila and incidentally looking over the field.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

RAILWAYS, ELECTRIC LIGHT, POWER, TELEGRAPH, TELEPHONES, AUTOMOBILES, AEROPLANES, ETC.

AVIATION IN THE FAR EAST.—During the month of February there was unusual activity in aviation circles. An aviation week at Bangkok early in the month under the direction of the Société d'Aviation d'Extreme Orient at which Mr. Van den Born, the wellknown aviator, made several flights daily in his Farman biplane reported in the Siamese papers to have been most successful. His Majesty, the King, and suite were in daily attendance and a number of passengers were taken on short flights daily. Among these were Mrs. Hamilton Price, H. R. H. Prince of Nakon Chaisee, H. R. H. Princess of Nakon Chaisee and H. R. H. Prince Adisorn.

Mr. Van den Born had but one machine and refrained from making any record. The altitude made varied from 100 to 500 feet. In January Mr. Van den Born participated in an aviation meet in Saigon.

According to latest advices negotiations were under way to have an aviation week at Singapore under the auspices of the Société d'Aviation d'Extreme Orient and another at Hongkong is being arranged.

At Shanghai M. Vallon made several flights at the Kiangwan race course making an altitude of 250 feet in a Sumner biplane.

At Manila Bud Mars made eight flights making an altitude of 5,700 feet in a Schriver machine very similar to the Curtiss biplane.

Bud Mars was booked to make exhibition flights in Tokyo, March 15.

BAGUIO ELECTRIC LIGHT.—This plant has been leased from the government by O. M. Shuman for the year. He contracts to supply 16 c. p. lights at ₱2.50 per month.

GERMANS SECURE JAPANESE CONTRACTS.—The contract for the supply of electric apparatus for the Tokyo Electric Light Co. has been awarded a German firm. Germans have also secured the order for machinery for the Kinugawa hydro-electric plant.

MULTIPLEX TELEPHONY.—Major Squires of the U. S. Signal Corps has perfected an invention whereby several conversations may be carried on simultaneously over one telephone wire. The invention is the property of the government and will be introduced in the Signal Corps service.

MOTOR CARS IN CHINA.—The automobile has invaded Peking and promises to become very popular. Consul General Knabenshune reports from Tientsin that there are over a dozen or more cars in Tientsin and half a dozen in Peking. He believes that a good business could be done with wealthy Chinese in closed motors designed along the lines of the sedan chairs now in use.

JAPANESE LIGHT RAILWAYS.—According to the Japan *Times* charters for two light railways were granted by the Railway Board. They are the Achigo Light Railway and the Banshu Light Railway. The charter for the former was applied for by Mr. Kihachiro Okura and others, the projected line covering a total length of forty-nine miles fifty chains between Kashiwazaki and Niigata. Its capital is four million yen. The latter, the Banshu Light Railway, was promoted by Mr. Yoshiro Shiba and forty odd local businessmen with an aggregate capital of 1,800,000 yen. The line is to be divided into a main line covering twenty-four miles ten chains between Takasago and Nishiwaki, Hyogo prefecture, and three branch lines, one between Kokubu and Mitsugi, covering four miles fifteen chains, one between Agata and Hojo covering eight miles forty-five chains and the last between Awadzu and Kakogawa, covering only fifty chains, making a total mileage of thirty-seven miles forty-five chains.

RUSSIAN AEROPLANE INVENTION.—A photographic apparatus to be used for scouting with aeroplanes so that the plates may be dropped without injury is the invention of a military aviator.

CHEMULPO ELECTRIC RAILWAY.—A company has been organized to instal an electric railway in this city.

WIRELESS TELEGRAPHY IN LOWER CHINA.—According to Consul General Anderson a wireless telegraphy plant at Hongkong for commercial purposes, recently announced as arranged, is delayed for a short time. There is some difference of opinion as to the plan for the commercial uses of a plant and its relations to naval and military establishments. It is promised, however, that the plant will be an effective one.

In the meanwhile there is considerable activity along the lower Asiatic coast in wireless-plant construction, and there will soon be communication by wireless telegraphy between Hongkong and Hanoi, in French China. Wireless service projected and more or less in course of construction in Indo-China includes one between Saigon and Hanoi of about 1,000 miles and costing about $19,000; one from Hanoi to Quang-chung-wan; another from Hanoi to Lang Biang; another from Lang Biang to Saigon; another from Lang Biang to Vientaine; and others from Saigon to Pnompenh and Battambang.

The Chinese Government also is constructing systems in Yunnan toward Tibet and in Tibet proper, which it is expected will be within reach of the lower coast of French and English systems. Indications are that within six months there will be a fairly complete system along the lower coast of Asia and one connecting with it in the interior which will form a supplementary service for the present land lines.

PUBLIC WORKS, DOCKS, WHARVES, BUILDINGS, ETC.

WORK SUSPENDED IN SINGAPORE HARBOR.—Messrs. John Aird & Co. have relinquished their contract for the construction of the wet dock and the reconstruction of the main wharf of the Tanjong Pagar. According to the *Penang Gazette* a different strata from that anticipated had been found by the contractors resulting in the sinking of foundations of the end walls at the lagoon dock and that following negotiations, the contractors had filed suit against the Tanjong Pagar Dock Board in the High Courts.

The administration report for the half year ended June 30, 1910, contains the following comment:

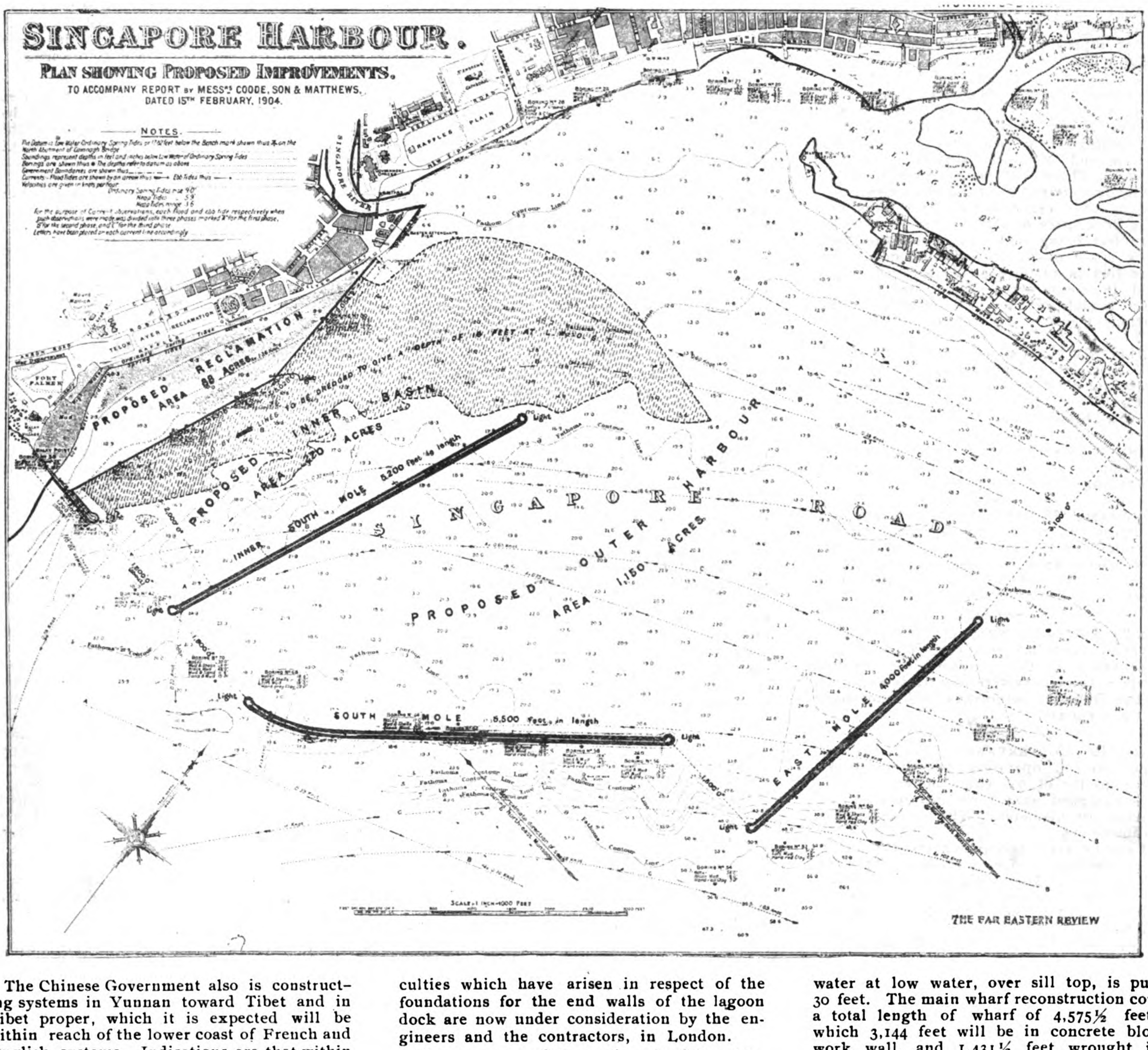
"It is to be regretted that the general progress of the new works, under execution by Messrs. John Aird and Co., has not been in any way commensurate with the reasonable anticipations of the contract. Certain difficulties which have arisen in respect of the foundations for the end walls of the lagoon dock are now under consideration by the engineers and the contractors, in London.

The progress of the main wharf has, too, been retarded, the first section of 500 ft. of new wharf at the western end only being handed over for the Board's use and occupation in April, being some 3½ months later than had been anticipated—since then two godowns have been erected by the Board and are now in regular operation. The cylinder construction on the adjacent length of wharf (some 700 feet to the western entrance to the lagoon dock has proceeded slowly, the necessary rate of progress to comply with the contract conditions not having been maintained, to the serious impediment of the Board's facilities for berthage accommodation, and consequent congestion of the traffic at the wharves, especially in calling operations.

It was in October 15, 1907, that the Dock Board accepted the tender of Messrs. John Aird and Company for the construction of the dock and the reconstruction of the main wharf, all in accordance with the conditions and specifications of the consulting engineers, Messrs. Cood, Son and Matthews, dated June 1907, at a cost of £998,700, the time of completion being five years.

The area of the wet dock is 24½ acres, and provides 3,837 feet of quay wall, also 900 feet of pitched slope. The depth of water at low water, over sill top, is put at 30 feet. The main wharf reconstruction covers a total length of wharf of 4,575½ feet of which 3,144 feet will be in concrete blockwork wall, and 1,431½ feet wrought iron cylinder construction, with a minimum depth alongside at lower water of 38 feet.

Further information taken from a late report to the Crown Agents by Messrs. Coode, Son & Matthews who were responsible for the



original report on sea bed conditions upon which the contract was based, indicates that a grave mistake was made in the original estimates. We find that Messrs. Coode, Son and Matthews arranged for a new series of borings between the northern and southern terminations of the wall with the result that, instead of the clay being found at a depth of 34 ft. 9 in. below low water level as was anticipated, it was not met with until a depth of 95 ft. had been reached, which is 60 ft. below the level shown on the contract drawings. Similarly, where it was anticipated that the clay would be found at 45 ft. 7 in. below low water, it was not found till a depth of 78 ft. below low water was reached, or 32 ft. 6 in. below the level on the contract drawings.

THE WHANGPOO CONSERVANCY. The report for the quarter ended December 31 shows an expenditure of Tls. 6,125,384.21, leaving a balance forward of Tls. 131,614.09

MANDALAY WATERWORKS.—The *Mandalay Herald* states that the municipal committee is preparing an extensive scheme to secure a water supply from Kinwun Lake, distant sixteen miles.

IMPROVEMENTS OF MANILA PORT.—The Bureau of Supply is erecting warehouses at Pier five to cost ₱450,000 and plans have been completed for two new piers each 850 feet long and 160 feet wide at a cost of ₱750,000. These will be equipped with the most modern freight handling equipment.

During the year 1909 two large piers, one with a deck space of 46,865 square feet, 28,500 square feet being under roof, the other with a deck space of 79,530 feet of which 54,500 square feet is under roof, were finished and placed in commission. They are in every respect modern and up to date, and cost the Government nearly ₱1,250,000.

PHILIPPINE ROADS.—Allotments for highway construction for roads and bridges to the amount of ₱250,000 have been made. Of this ₱25,000 will be expended in the construction of a bridge near Atimonan, Tayabas.

HANKOW WATERWORKS.—A limited Chinese company is being formed for the purpose of installing a water supply.

YOKOHAMA HARBOR IMPROVEMENTS.—It is proposed to secure the approval by the Department of Finance covering the division of the harbor into two sections, one to be dredged a depth of 30 feet and the other 36 feet.

TOKYO SEWERAGE SYSTEM.—It is proposed to expend 33,660,000 yen covering a period of five years for the purpose of installing a modern sewage system and it is expected that the Imperial authorities will undertake half the expense.

HAI HO CONSERVANCY.—The Holland dredge now in operation on these works has a capacity of 500 cubic meters an hour and is equipped with 1,000 feet of pipe line 20 inches in diameter. The following are her dimensions:

Length between perpendiculars 157 feet 6 inches; breadth, 36 feet 9 inches, depth 11 feet 6 inches. The dredging depth of the Hsin Ho, when dredging by suction or by the bucket chain, with the ladder at 45° is 26 feet.

It was built by Messrs. A. F. Smulders, Scheedam, Holland.

SHIPBUILDING, MERCHANT MARINE, AND FISHERIES.

SIAM STEAM NAVIGATION CO.—The net profit for the half year ended December 31 amounted to Ticals 172,460 and after allowing 5% for depreciation of steamers, 10% depreciation on small craft, there remained Ticals 114,135 for distribution as follows: 5 per cent for the half year to the shareholders, Ticals. 100,000; Remuneration to Directors' Ticals, 1,192; Reserve Fund Ticals, 10,000; Carried forward, Ticals 2,943.

NEW JAPANESE BATTLESHIPS.—An order each is reported to have been placed with the Mitsubishi Company and the Kawasaki Company for the construction of 22,000 ton battleship. Experts have proceeded to England to study the design of the new armored cruiser ordered from Vickers, Maxim & Co.

NEW GRAVING DOCK AT SASEBO.—The new dock at this point expected completed in the fall will be the largest dock in the Orient. It will be 286 feet longer than the Kure dock and 229 feet longer than the dock at Yokosuka and its width is greater than those docks by 21 and 19 feet respectively. Heretofore Dock No. 3 of the Mitsuibishi was considered the largest.

EAST ASIATIC CO.'S ENTERPRISE.—A new boat for the Bangkok to be provided with motor engines and of 3,000 h. p. capacity has been ordered from Messrs. Burmeister & Wain, Denmark, for the Bangkok-Europe line of this company. A new vessel ordered by the Siam Steam Navigation Co. to have 600 h. p. motors for coast trade has also been ordered.

THE HONGKONG & WHAMPOA DOCK CO. LTD.—The report for the half year, ended December 31, shows most satisfactory results. The net profit for the half year amounted to $50,851.88 and this with $148,940.06 forward from the previous term made $199,940.06 available for distribution. A 2.5% dividend was declared for the six months and $137,-291.94 was carried forward. During the half year besides the general activity that featured the construction and repair work in the yards, the general engineering, boiler and foundry departments have been unusually busy. Among the special contracts that have engaged wide attention are the machinery for the pulp works plant of Indo-Chine, an extension to ice works at East Point, the new Star Ferry Wharf at Hongkong, the woodwork and assembling of the cars for both sections of the Kowloon Canton Railway and the prospect for a marked extension in railway orders as the Chinese lines in South China extend. Manager Dyer came in for a well deserved compliment at the annual meeting when Mr. A. Forbes, who seconded the adoption of the report, expressed great satisfaction at the marked expansion of the operations of the company and said:

"The shareholders are largely indebted to the Chief Manager, Mr. Dyer, who has been indefatigable in promoting the interests of the company and maintaining the reputation of the dock for good work done".

LAUNCHING OF THE SHINYO-MARU.—This vessel, constructed for the Toyo Kisen Kaisha, which was launched last month from the Mitsubishi yards, differs from her sister ships the Tenyo and Chiyo in that her gross tonnage is 13,700 instead of 13,500 and her h. p. increased from 16,850 to 20,000 with the speed increased from 19 to 21 knots. She will also have what is termed a "garden" on the boat deck for officers' quarters and wireless telegraphy. Her description follows:

Length, between perpendiculars	550 feet.
Breadth	63 ,,
Depth	38.6 ,,
Full draught	31.8 ,,
Tonnage, gross	13,700
,, capacity	21,650
Speed	21 knots.
Horse-power	20,000
Engines—Parson's triple-shaft turbines.	
Number of boilers	13
Passenger accommodation:	
First class	200
Second Class	40
Third ,,	774
Special first class	2

She has been built under Lloyds' survey and will be classed 100 A1.

THE KOCHIEN TRANSPORTATION AND TOWBOAT CO. LTD.—This company paid a dividend of 5% for the half year.

SIAM STEAM PACKET CO.—The total profit for the year was Ticals 22,046.25, out of which a dividend of 7% was paid and Ticals 679.37 carried forward.

PROPOSED NEW DOCK FOR SHANGHAI.—In order to provide a permanent repair base for the Navy, H. E. Sheng Hsuan-huai, President of the Board of Communications, has proposed that dock and shipbuilding yards be established in Shanghai at a cost of five million taels.

TANKO S. S. CO.—The profit for the half year was yen 400,000 which covered losses for previous years and other extraordinary expenses leaving 40,000 to carry forward.

THE TOYO KISEN KAISHA.—Mr. A. B. Renner, formerly purser of the Pacific Mail, has been appointed San Francisco Agent of this company; Messrs. Erlanger & Galinger, agents in Manila, and the American Trading Co. at Shanghai. The American Maru was the first vessel to cross the Pacific under the new arrangement with the Western Pacific.

FLOUR RATE WAR.—Portland and Puget Sound vessels have inaugurated a rate war that has cut freights to $3 to Shanghai and $2 to Hongkong.

MINES, MINERALS, THE METAL TRADE, MACHINERY, ETC.

SIBERIAN PLACER MINING.—The Orsk Goldfields Co. is installing an electrically driven bucket dredge having a capacity of 7,500 cubic yards per diem of 24 hours on the Kolchan mines. This dredge will be operated and a 750 h. p. plant, 6,600 volts, with a 3-phase, 60 cycle transmission line 10 miles in length. The dredge was supplied by the New York Engineering Co. The motors for the dredge are 3-phase, 60 cycle, 440 volts and were supplied by the Westinghouse Manufacturing Co., and the generators by the General Electric Co. The dredge itself is 90 feet long, 45 feet wide and has a draft of nine feet with sixty buckets. These mines are situated about 50 miles from Nikolievsk and inland about 18 miles from the Okhotsk Sea and cover an area of 16,000 acres. They are reached by steamer by a branch of the Amur.

THE ORIENTAL CONSOLIDATED MINING CO.—This prosperous American company operating in Unsan district, Chosen, reports for the last fiscal year a net profit of $623.676 gold. In all 320,707 tons of quartz was milled and gold to the value of $1,749,468 gold obtained therefrom. The ore reserves at the end of the year aggregated 838,250 tons valued at $3 948,475 gold. The Company employs 60 Americans and Europeans, 150 Japanese, 500 Chinese and 5,000 Koreans The dividend for last year was 11.5%.

CHINA'S COAL OUTPUT.—The total output of coal computed for 1909 places the figures at approximately 3,500,000 tons, of which the Chinese Engineering & Mining Company's share was 1,365,000 tons bituminous; Shantung Mining Co., 272,0 0 tons bituminous; the Han-Yeh-ping Iron & Coal Co. Ltd., 520,000 tons; Peking Syndicate 245,000 tons anthracite; Belgian mines, Chihli, 200,000 tons; Pechsin Mines 100,000 tons anthracite; and the Fushun Coal of the South Manchuria Railway Co., 730,000 tons.

THE RENONG DREDGING CO. LTD.—The report for the year shows that the returns of tin per cubic yard of ground amounted to 1307 ounces as against 12,325 ounces estimated. As the dredge has only been working since March and the operations mostly preliminary, the results have been sufficiently satisfactory to encourage the shareholders to look forward to a substantial dividend next year.

HANYANG IRON WORKS.—The Government Steel Works at Wakamatsu has placed a contract with the Hanyang Iron Works, Hankow, for the delivery of 10,000 tons of ore and 10,000 tons of pig iron annually for twenty years.

THE SIBERIAN SYNDICATE LTD.—At the annual meeting of this company special reference was made to an expert report on the Atbasar Copper Fields in which the syndicate has large interests, to the effect that the prospecting developed about 20,000 tons of 12% copper ore.

THE AMUR GOLD INDUSTRY.—Reviewing the situation the *Mining Journal* says:

The area of the 560 gold placers in this eastern part of Siberia makes about 158,000 acres, of which 208 placers, occupying 58,000 acres, are being worked now. The total quantity of gold sand washed is 310,000 tons, and the result in pure gold was 159,229 ozs. with an average content of about half-an-ounce per ton of sand. In the neighbouring province of Yakutsk seventeen placers are being worked, and 300 tons of auriferous sand washed, yielding 44,000 ozs., average content 146 ozs. per ton of sand. The production in the Amur province has been registered since 1868 by the Government, and from that year up till November 1, 1910, the total production according to official sources has been about 7,000,000 ozs. This figure cannot be called exact for much of the gold escapes registration amounting to no less than 70 to 90 per cent. of the annual quantity officially declared. Of recent years small gold industries have grown up on the ground, which, with the introduction of the free circulation of gold on March 1, 1902, have grown considerably. Last year gold poaching was particularly rife, as many as 1,500 thieves having appeared on the River Pimpon on the Upper Amur Gold Company's placers, and removed about 25,000 ozs. of gold from the sands, and these robbers were only shifted with the assistance of a posse of soldiers from Blagoveshchensk.

SIAMESE SECRET OF BRONZE CASTING IN SIAM.—Vice Consul General Carl C. Hansen of Bangkok gives the following formula discovered by Major Cerini in an old Siamese manuscript belonging to the late King as translated by that officer with his comment:

"Take 12 ticals (1 tical equal to one-half ounce avoirdupois) weight of pure tin, melt it at a slow fire, avoiding bringing it to red heat. Pour 2 ticals' weight of quicksilver, stir until the latter has become thoroughly absorbed and amalgamated; then cast the mixture in a mold, forming it into a bar. Take one catty in weight (80 ticals) of refined copper and melt it. Then gradually incorporate with it the amalgam, keeping in the meantime the fused mass well stirred.

When this has been done, throw into the crucible a sufficient quantity of ashes obtained from the stems of the bua-bok (terrestrial lotus) creeper, so as to cover the molten metal. Remove the dross with an iron ladle; the metal remaining is samrit bronze. According to this recipe the proportion of the ingredients employed in the manufacture of the alloy in question thus proves to be: 85.11 copper, 12.76 tin, and 2.13 quicksilver. A late qualitative analysis shows that this alloy also contains traces of gold, silver, and iron."

TIN MINING IN SIAM.—According to the report of the British Consular service there are 14 principal mines being worked in the province of Senggora and 12 in the province of Nakon Sritamarat, but besides these a large number of persons hold licenses and work tin on a small scale. There is still only one concession held by a European—a Danish subject—situated in the district of Chana. All the other mines are worked either by Siamese or Chinese. The greater part of the Monthon has never been properly prospected.

COMMERCIAL, FINANCIAL AND MISCELLANEOUS

THE HONGKONG ROPE MANUFACTURING CO. LTD.—A final dividend of $1, making a total of $2 a share for the year, was paid, $3,000 placed in reserve and $13,321.25 forward.

THE HONGKONG & SHANGHAI BANKING CORPORATION.—The report for the half year ended December 31 shows net profits including $2,029,390 83 brought forward from previous term of $5,243,906.46 of which $250,000 was placed to the credit of silver reserve fund making it $16,250,000. After deducting directors' remuneration a dividend of £2 sterling and a bonus of five shillings a share were paid absorbing $2,945,454.55 and leaving a balance forward of $2,039,151.91.

HUMPHREY'S ESTATE AND FINANCE CO. LTD.—The net profits for the year including $5,471 from last account amounted to $75,705, out of which a dividend of 4.05% was paid and $1,181.65 carried forward.

CHINA FIRE INSURANCE CO. LTD.—A dividend of $7 and a bonus of $2 a share were declared for the year.

CHINA SUGAR REFINING CO. LTD.—A final dividend of $5 per share making 10% for the year was declared, $80,000 carried to Equalization of Dividend Fund, and $22,730.30 forward.

PHILIPPINE CARNIVAL ASSOCIATION.—Mr. C. M. Cotterman, Director of Posts, has been elected president and Mr. Jerry Manning, Assistant Insular Treasurer. treasurer; Lieut. Adams, secretary; and Mr. M. L. Stewart, director-general of the 1911 Carnival, and Judge D. R. Williams, directors; Governor General Forbes, honorary president; and Speaker Sergio Osmeña, Major General J. Franklin Bell, Admiral Hubbard, Brigadier General F. R. Funston, Brigadier General J. J. Pershing, and Brigadier General Daniel R. Brush honorary vice-presidents; Secretary C. B. Elliott, president, and Felix M. Roxas, first vice-president, Sr. Joaquin Elizalde 2nd vice-president.

CHARTERED BANK.—At the approaching annual general meeting of shareholders, the directors will recommend that a dividend be declared for the past half year at the rate of 15 per cent per annum free of income tax, that £25,000 be added to the reserve fund, that £10,000 be added to the officers' superannuation fund, that £25,000 be written off premises account, and that £126,363 be carried forward.

HONGKONG HOTEL CO.—The net profit for the year was $64,129 out of which dividends of $3 a share on old and $1.50 on new shares absorbing $48,000 were paid.

CEYLON'S GRAPHITE EXPORT.—The export to the United States for the year 1910 were valued at $1,800,000.

JAPAN'S SAVINGS BANKS.—Up to the end of October the total of deposits was 158,387,000 yen, an increase of 35,000,000 for the eight months.

PEACE SOCIETY OF AMERICANS IN JAPAN.—This organization is proposed for the promotion of better relations between the two countries. Over a hundred applications for membership were presented at the first meeting at which Mr. D. H. Blake of the American Trading Co. was chairman.

HONGKONG ROPE MANUFACTURING CO., LTD.—The following is an excerpt from the directors' report for 1910:

The balance at credit of profit and loss account is $76,321.25 which it is proposed to appropriate as follows:—

To place to Reserve Fund .... $ 3,000.00
To pay a Dividend of $1.00 per share $60,000.00
To carry forward to the credit of next year's account $13,321.25

Consulting Committee:—In accordance with the Articles of Association, Messrs. H. P. White, D. W. Craddock and Dr. J. W. Noble retire, but offer themselves for re-election.

THE MANILA HOTEL.—The palatial block of buildings now in course of construction on the Luneta extension for the Manila Hotel Company, and rapidly approaching completion, will be opened early in December. The management of the new Hotel has been placed in the experienced hands of Mr. D. R. Reynolds formerly manager of the Hotel Bristol, New York, who is due to arrive in Manila in August. Mr. S. W. Thompson has been appointed Assistant Manager.

NEGROS PHILIPPINE LUMBER CO.—The S. S. "Tacoma Maru", last voyage, brought over a complete rolling stock equipment for the above company, which has been forwarded to the cuttings. The new plant will be used on a six-mile logging railroad, and will be in operation within the course of a few weeks.

* LONDON METAL MARKET

The following are to-night's (February 2) prices of metals:—

COPPER.	£ s. d.		£ s. d.
*Tough cake and ingot	59 10 0	..	60 0 0
*Best selected	59 10 0	..	60 0 0
*Electrolytic	60 10 0	..	61 0 0
*Sheets and sheathing	70 0 0	..	—
*Flat bottoms	78 0 0	..	—
STANDARD †Cash	55 3 9	..	—
STANDARD †Three months	56 0 0	..	—
*Copper tubes, seamless per lb.	0 0 8½	..	—
*Lake	61 0 0	..	62 0 0

* Less 3½ per cent. † Net.

ALLOYS.			
BRASS: Wire	0 0 6¾	..	—
,, Tubes (solid drawn)	0 0 6¾	..	—
,, Sheets	0 0 7	..	—

TIN.			
English ingots, f. o. b.	192 0 0	..	193 0 0
,, bars	193 0 0	..	194 0 0
,, refined	194 0 0	..	196 0 0
Straits... Cash	191 15 0	..	—
Straits... Three months	192 0 0	..	—
Australian spot	—	..	—
Banka (in Holland) Cash / Three months	192 5 0	..	—

LEAD.			
Spanish or soft foreign	£12 18 9	..	13 0 0
English pig, common	13 3 9	..	13 5 0
,, L. B.	13 12 6	..	—
,, sheet and bar lead	14 15 0	..	—
,, pipe	15 5 0	..	—
,, red	15 17 6	..	—
,, white	18 15 0	..	—
,, patent shot	16 2 6	..	—

SPELTER.			
Silesian ordinary brands	23 5 0	..	23 7 6
,, special brands	23 15 0	..	23 17 6
English Swansea	—	..	—
Sheet zinc	28 10 0	..	—

ANTIMONY.			
Antimony	27 0 0	..	29 0 0
,, Crude	12 0 0	..	13 10 0
,, Ore (basis 50%)	7 0 0	..	8 0 0

QUICKSILVER.			
Flasks, 75 lbs. warrants	8 0 0	..	—

ALUMINIUM.	Per ton.		Per ton.
98-99 per cent	68 0 0	..	70 0 0

NICKEL.	Per ton.		Per ton.
98-99 per cent. guaranteed	167 10 0	..	171 0 0

PLATINUM.

Per oz. Troy, 160s.; nominal and subject to negotiation.

* Mining Journal.

Hongkong and Shanghai Banking Corporation

DEPOSITORY OF THE GOVERNMENT OF THE PHILIPPINE ISLANDS

Capital (Paid in Cash).........$15,000,000 **Silver Reserve Fund............$16,250,000**
Sterling Reserve Fund......$15,000,000 **Reserve Liability of Prop'rs.$15,000,000**

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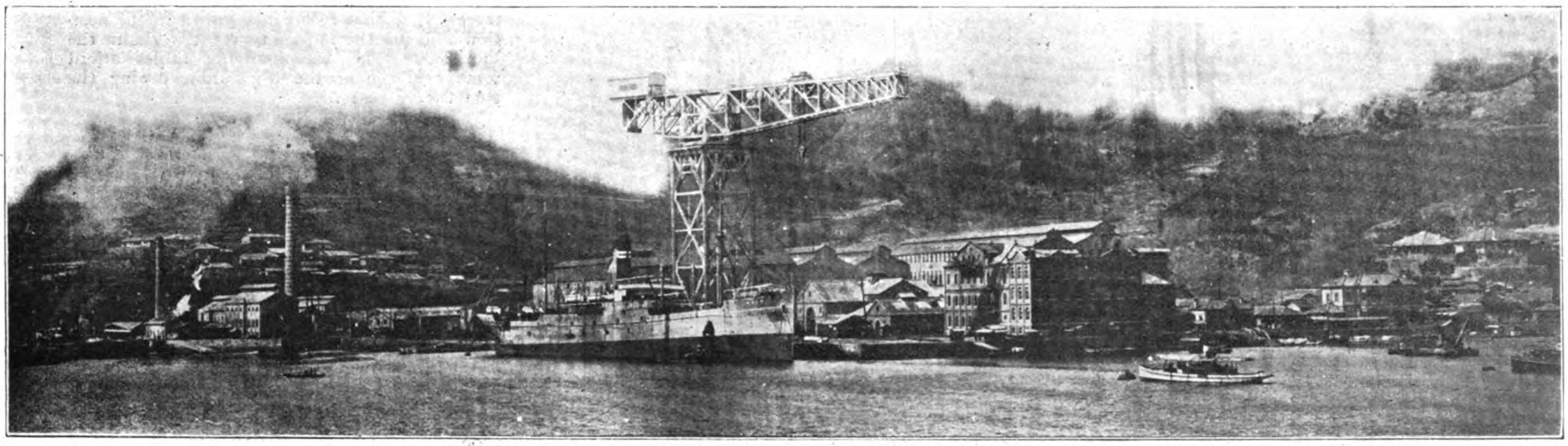
THE FAR EASTERN REVIEW

COMMERCE ⊛ ENGINEERING ⊛ FINANCE

VOL. VI. MANILA, P. I., SHANGHAI, AND YOKOHAMA, APRIL, 1911 No. 11.

THE MITSU BISHI DOCKYARD AND ENGINE WORKS AT NAGASAKI

The Mitsu-Bishi Dockyard and Engine Works at Nagasaki is one of the oldest and largest shipbuilding and engineering establishments in Japan, if not in the East. It is not only one of the largest, but it is equipped with the greatest variety of tools for the production without sub-contracting of every type of ship, machinery and boilers for land and marine use, steel girders and buildings, also electrical machinery. Its specialities are Parsons' Marine Steam Turbines and Turbo-Generators, Stone's Manganese Bronze Casting and Morison's Contraflo Condenser.

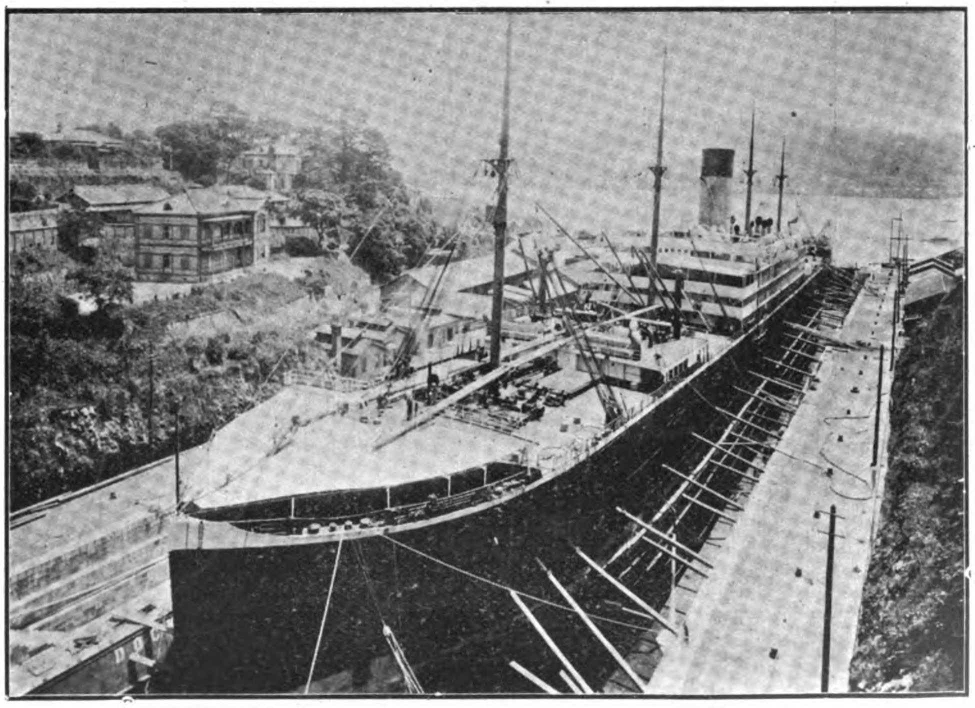


GENERAL VIEW, MITSU BISHI DOCKYARD AND ENGINE WORKS, NAGASAKI, JAPAN

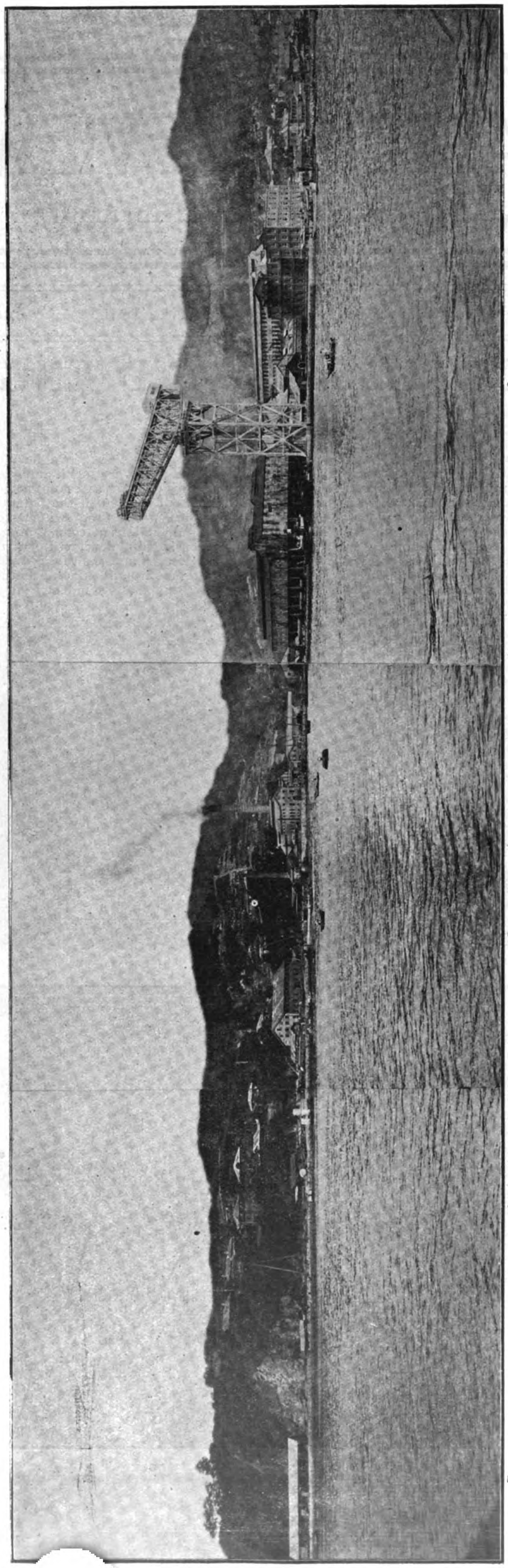
Many shipbuilding firms are content to construct the more important items of a ship, depending to a great extent upon other establishments for the manufacture of auxiliary parts. The principal advantage of this practice is that there is less capital involved in plant, consequently less loss incurred during the periods of depression which regularly recur.

Maximum Amount of Work.—The Mitsu-Bishi Works on the other hand, like those at Barrow or Clydebank in Great Britain, are laid out with the object of doing the maximum amount of work upon any ship, purchasing from outside sources only raw materials and proprietary or patented articles. The advantage of this method is that there is not only economy in production under one management, but less likelihood of the separate items being delivered behind time, and so interfering with the consecutive progress of the building of the ships. Moreover, there is no better plan for the Mitsu-Bishi Works to adopt than this, for, although Japanese manufactures are rapidly improving, those of shipbuilding and engineering accessories are yet in their infancy, and cannot be depended upon for the best class of work and material, which the Mitsu-Bishi Co. is ever anxious to turn out from their works.

History of the Works.—The works have a very interesting history, being founded by the "Shogun" Government in 1856. Dutch engineers were employed, and the necessary machines and gear for commencing the works were imported from Holland. A portion of the jetty where the 150 ton giant crane now stands was constructed then by means of an old-fashioned diving bell of Dutch make, which apparatus still remains in the works in memory of the founders. Work was then carried on only on a very small scale for the purpose of repairing small steamers owned by the "Shogun." At the restoration the Works came under the control of the Public Works Department and were very much extended. In 1871 a large dry dock at Tategami, now called No. 1 Dock, was constructed, the patent slip at Kosuge, then owned by a British merchant, was purchased, and from time to time the works were considerably developed. In 1883 a wooden steamer named the *Kosuge Maru* of 1,500 tons gross was built, which was the forerunner of the shipbuilding industry in this Island Empire.



S. S. MINNESOTA IN NO. 3 DOCK



GENERAL VIEW OF THE AKUNOURA ENGINE WORKS OF THE MITSU BISHI CO. AT NAGASAKI

First Iron Steamer Built.—In 1884, on the abolition of the Department of Public Works, the establishment and the various subsidiary works connected with it were purchased by the Mitsu-Bishi Company, who started this branch of business with only 800 men. Three years later the first iron steamer of about 206 tons gross, named the *Yugao Maru*, was built, followed by three other steel steamers, the *Chikugogawa Maru*, the *Kisogawa Maru* and the *Shinanogawa Maru*, each about 700 tons gross, and also by the steel steamer *Suma Maru*, 1592 tons gross, built in 1895, which was then considered an epoch in the shipbuilding industry of Japan. But the true development dates from the termination of the Chino-Japanese War. In 1896 a great stimulus was given to the growth of shipping and shipbuilding in Japan by the enactment of the Navigation Encouragement Law and the Shipbuilding Encouragement Law. About this time the Nippon Yusen Kaisha first organized its European Line, and decided to build six steamers of 6,000 tons each. The construction of one of these steamers was undertaken by the works and was finished in 1898. This was the first steamer of such dimensions ever built in Japan, and subsequently there were built many vessels including the Turbine Trans-Pacific liners of 13,500 tons, destroyers, despatch boats, etc. During this period the Mitsu-Bishi Company continued to keep the works constantly supplied with the latest and most improved tools, appliances and plant. Leading members of the staff were despatched to the various European engineering centres to learn the most up-to-date method of construction, and a number of British experts were engaged as technical advisers and instructors. Immediate returns were looked upon as a very secondary consideration, the whole aim of the firm being to equip an establishment of which Japan might be proud in respect to both workmanship and business integrity, so that it has now grown to the position of being the most important works in the Far East. The accompanying tables afford some evidence of the work done during the past twelve years.

TABLE I.

Annual Production of the Works during the past Twelve Years.

Year.	No. of Vessels.	Engines.	Gross Tons.	I. H. P.	Average Workmen employed per day.
1898	4	4	7,703	4,225	3,430
1899	12	12	4,007	3,189	3,558
1900	13	9	11,617	13,519	3,792
1901	6	6	7,194	6,238	5,209
1902	9	6	15,807	13,336	5,193
1903	8	8	13,078	11,463	5,658
1904	7	5	11,859	12,082	5,292
1905	9	7	12,973	12,731	6,745
1906	13	11	10,031	22,735	8,871
1907	4	4	7,859	23,519	9,669
1908	4	4	23,332	36,417	9,011
1909	4	4	29,596	33,379	5,703

TABLE II.

Numbers and Gross Tonnage of Vessels docked during the Past Twelve Years.

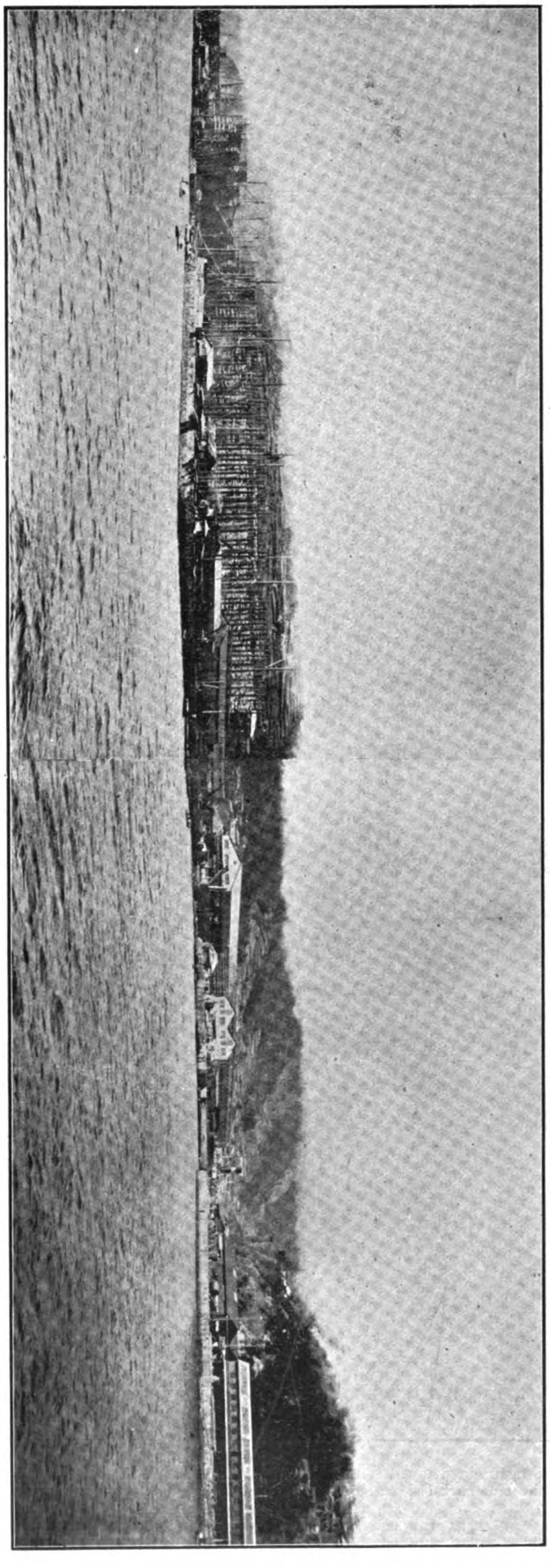
Year.	Dry Docks. No. of Vessels.	Dry Docks. Gross Tonnage.	Slip. No. of Vessels.	Slip. Gross Tonnage.
1898	84	254,069	19	3,539
1899	95	272,146	29	9,042
1900	103	260,269	32	9,271
1901	111	283,977	30	10,013
1902	76	177,418	31	10,121
1903	47	133,840	20	5,295
1904	65	155,279	26	6,271
1905	117	352,758	22	7,776
1906	97	385,834	26	8,167
1907	90	243,808	17	3,928
1908	39	135,606	17	3,672
1909	57	148,102	13	1,657

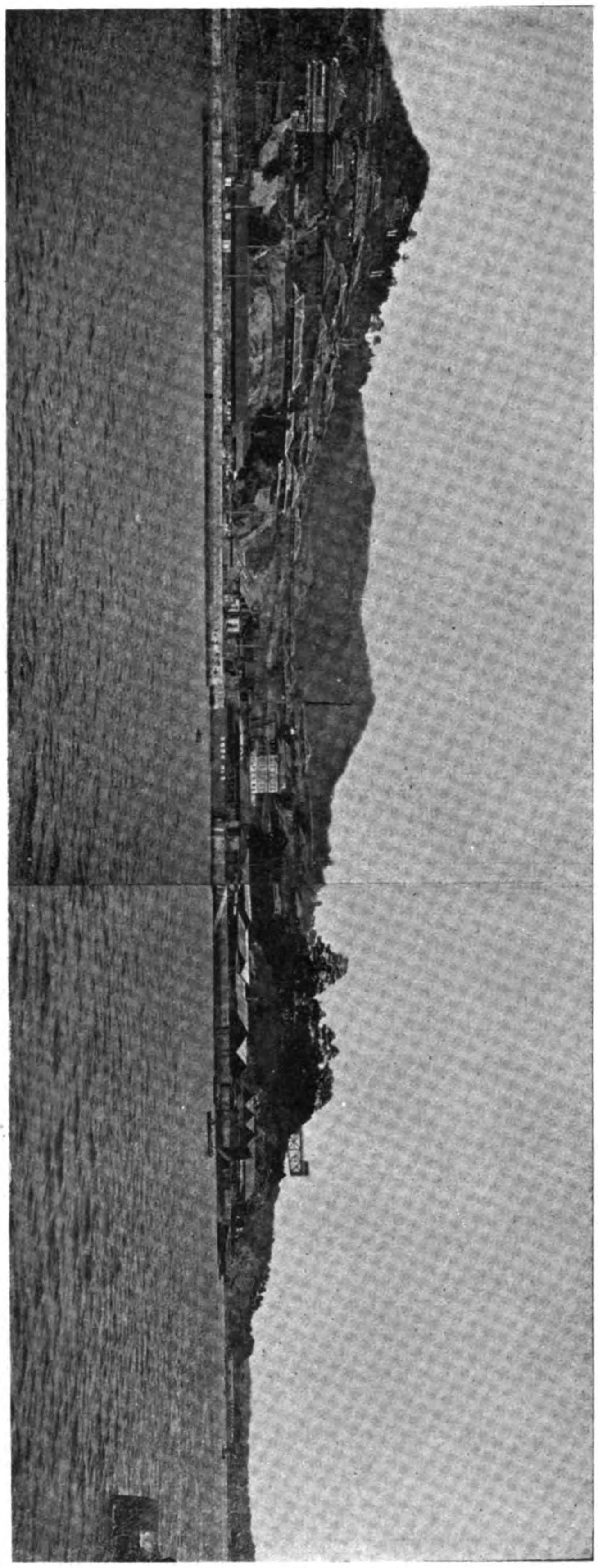
General Arrangement of the Works.—The establishment, which is situated on the inner harbour of Nagasaki, extends along almost the whole of the Western Shore of the harbor, having a water frontage of about 8,000 ft., and covering an area of over 114 acres, with numerous workshops and dry docks equipped with all the latest and most up-to-date machine tools and appliances for shipbuilding, engineering, dry-docking and electrical engineering work, besides a powerful hydraulic and electrical installation, and pneumatic plants for the lighter class of work, such as rivetting, caulking, chipping, etc.

The works consist of four principal sections, viz: Shipbuilding Yard, Engine Works, Dry Docks and Slip.

The shipyard at Tategami, which is at the south of the harbor, has seven building berths ranging from 240 ft. to 700 ft. long and an annual output capacity of over 30,000 tons. Mould loft, scribe boards, plate and angle bending shop, plater's machine shop, smith shop galvanizing shop and machine shop are arranged at this yard. The joiners', cabinet makers', polishing and woodworkers', upholstering and other departments associated with the shipbuilding are all laid out contiguous to the shipbuilding yard on a very extensive scale, and furnished with varied plant of the latest and most improved type.

MITSU BISHI DOCKYARD AND ENGINE WORKS: PANORAMIC VIEW OF THE YATEGANIC SHIPYARDS AND VICICITY AT NAGASAKI





The engine works at Akunoura, which is at the inner side ef the harbour, covers a large area, and embraces erecting and fitting shops, boiler shop, machine shop, turbine shop, electric shop, blacksmith shop, copper smith shop, pattern and foundry shops, etc. Most of them are adequately fitted with electrically driven overhead cranes of various capacities

Between the shipyard and engine works there are three dry docks. The largest of these can accommodate vessels up to 714 ft. on the keel, 84 ft. beam and 34 ft. 6 ins. draft, and is indeed one of the finest and largest graving docks in existence at the present day. The patent slip is situated on the other side of the harbor right opposite the shipyard, and is capable of lifting ships up to 1,000 tons gross.

ADMINISTRATIVE DEPARTMENT.

The administrative department, or main office, is a substantial brick building in three blocks, situated at Akunoura, at the main entrance to the engine works.

The basement of the front block contains the mess room for draughtsmen and the boiler room for steam heaters. The first floor has the board room, private office of the general manager, corresponding and secretarial office, and the telephone room. The second floor is entirely occupied by the estimating engineer's office, comprising buying, estimating, counting and general statistical departments. On the floor above is situated the drawing office for Admiralty work. It is 84 ft. by 31 ft., and has accommodation for 25 ship draughtsmen and 25 engine draughtsmen. The basement of the left wing contains the main time office, book and cashier's department; the first floor the main engine drawing office, which is 69 ft. by 47 ft. with accommodation for 110 draughtsmen; and the second floor for ship drawing office, with accommodation for 42 draughtsmen. Each drawing office has a large fireproof safe at one end of the office, in which the drawings are all classified and stored. The floor above is a completely equipped photographic department with six large sun-printing frames and one Hall's Continuous Electric Copier. The basement of the right wing contains the works police department and engine works time office, while on the first floor there is a series of offices for Admiralty overseers and other superintendents.

Drawing Offices.—It may be mentioned here that there is a second ship drawing office at the shipyard. It is 120 ft. long by 40 ft. broad and contains the detail and the decorative departments. In the former smith work, castings and all fittings are dealt with, and in the latter all the decorative works of the ships. These two departments are specially situated in the shipyard, so as to be contiguous to the ships under construction, and to the joiners and cabinet makers, upholstery and decorative painters' workshops. The office has accommodation for 60 draughtsmen, and is equipped with photographic room and large spacious fireproof safe.

The ship drawing offices, therefore, have a staff of 127 draughtsmen in all, under the charge of the chief ship draughtsman, who has also the charge of the experimental tank.

The engine works manager has an office close by the main office, and in the same block of buildings there is the electrical engineers' drawing office, with accommodation for 15 draughtsmen.

The shipyard manager has an office at Tategami with a time office in the vicinity; there are also a number of rooms for Lloyds' surveyors, government surveyors and ship owners' superintendents in the same block of buildings.

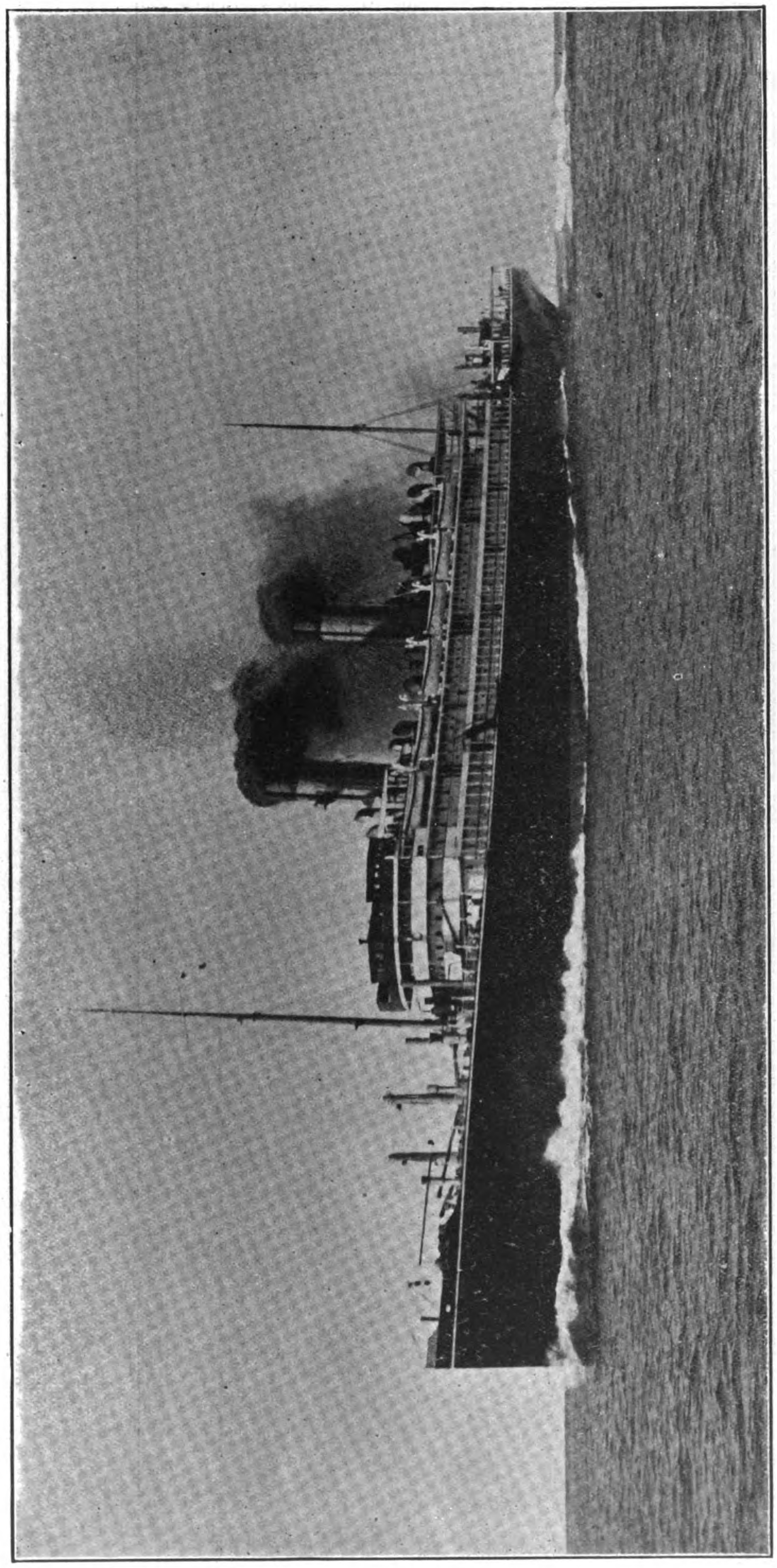
A system of telephonic communication is in use throughout the works, so that, vast as is the establishment, its organization overcomes any disadvantages of distance. There is a regular system of storing materials, so that various sorts and dimensions are readily accessible.

SHIPBUILDING DEPARTMENT.

Building Berths and Launching Ground.—In describing the works, it may be more interesting to review the departments and plants in the order of their use and importance in the building of the ship rather than to adopt an itinerary method.

The works have seven berths, viz.:—

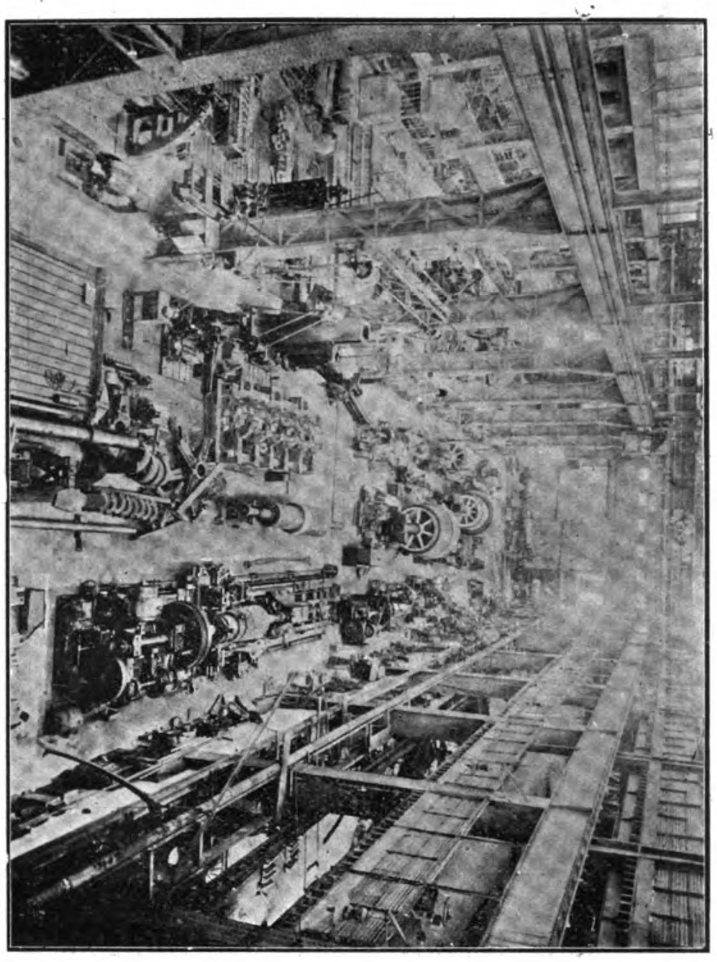
No. 1 Berth for vessels up to 680 ft., No. 2 Berth for vessels up to 700 ft., No. 3 Berth for vessels up to 580 ft., No. 4 Berth for vessels up to 460 ft., No. 5 Berth for vessels up to 340 ft., No. 6 Berth for vessels up to 300 ft., No. 7 Berth for two vessels up to 240 ft.



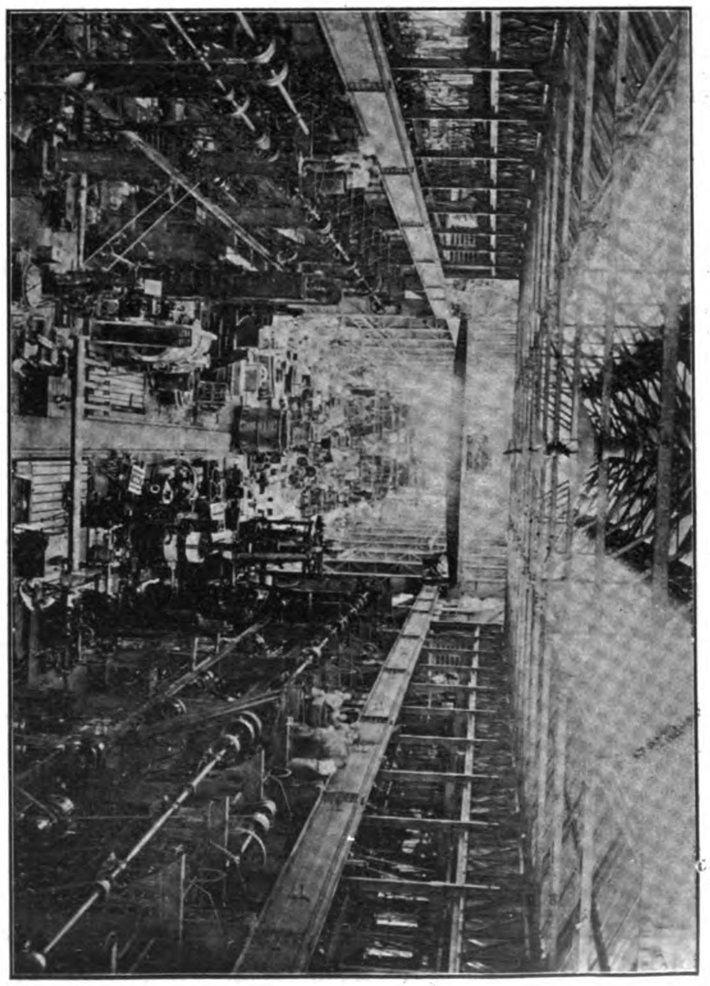
TRIPLE SCREW TURBINE STEAMER "CHIYO-MARU."—Built and engined by Mitsu Bishi Dockyard and Engine Works, Nagasaki, November 1908, to the requirements of the Imp. Japanese Government Rules and Lloyd 100 A-1.—Length, 550 feet 0"; Breadth, 63 feet 0"; Depth, 38 feet 6"; Gross tonnage, 13500 tons; Displacement, 18725 tons; Engines, Parsons' Three Shaft Steam Turbines; Indicated horse power, 16850 H. P.; Speed, 21 knots; Shipowners, Messrs. Toyo Kisen Kaisha, Tokio.—(This photo was taken on her full speed trials which took place on 13th Oct. 1908.)

Several of these have been constructed with a view of supporting the concentrated weight of modern warships.

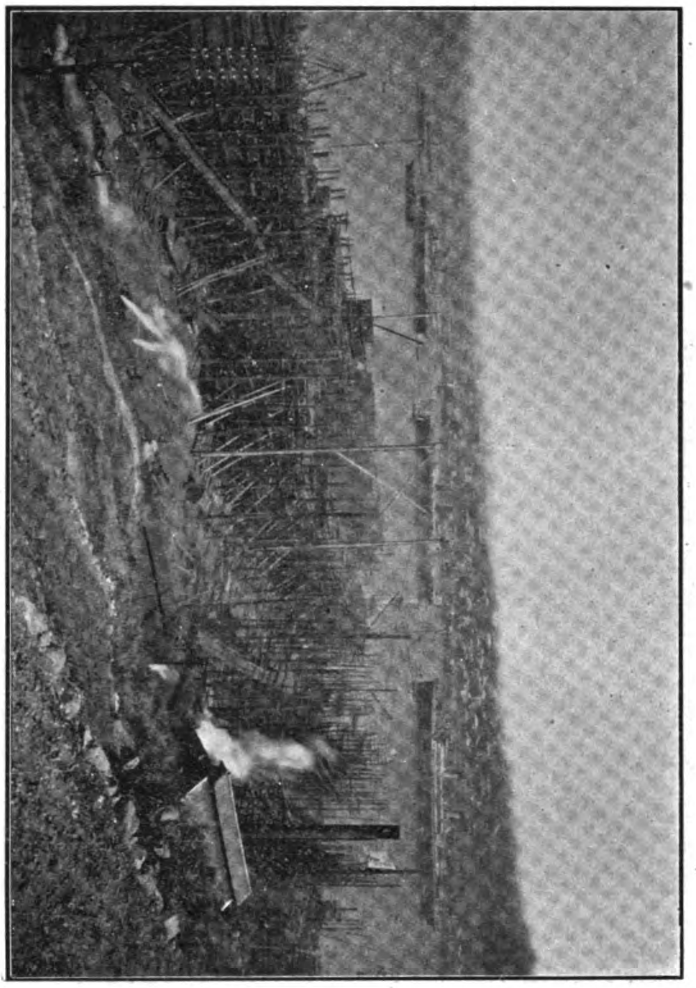
There being spacious water at the end of the building berths only a small quantity of drags and checks are required for launching the largest vessels. The berths are well equipped with powerful jib cranes at frequent intervals, lifting weights up to three tons on board during construction. There are several locomotive cranes throughout the yard, ranging from five to three tons. These are also used for stocking ships' plates and angles, etc., from the lights, and for subsequently lifting



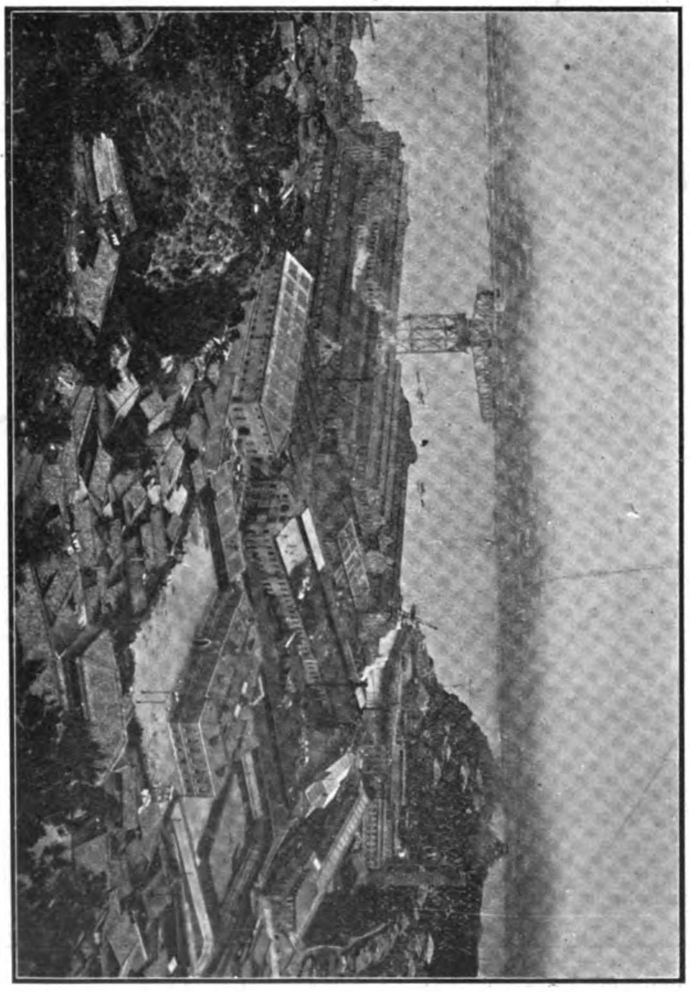
TURBINE SHOPS OF THE MITSU BISHI COMPANY AT NAGASAKI



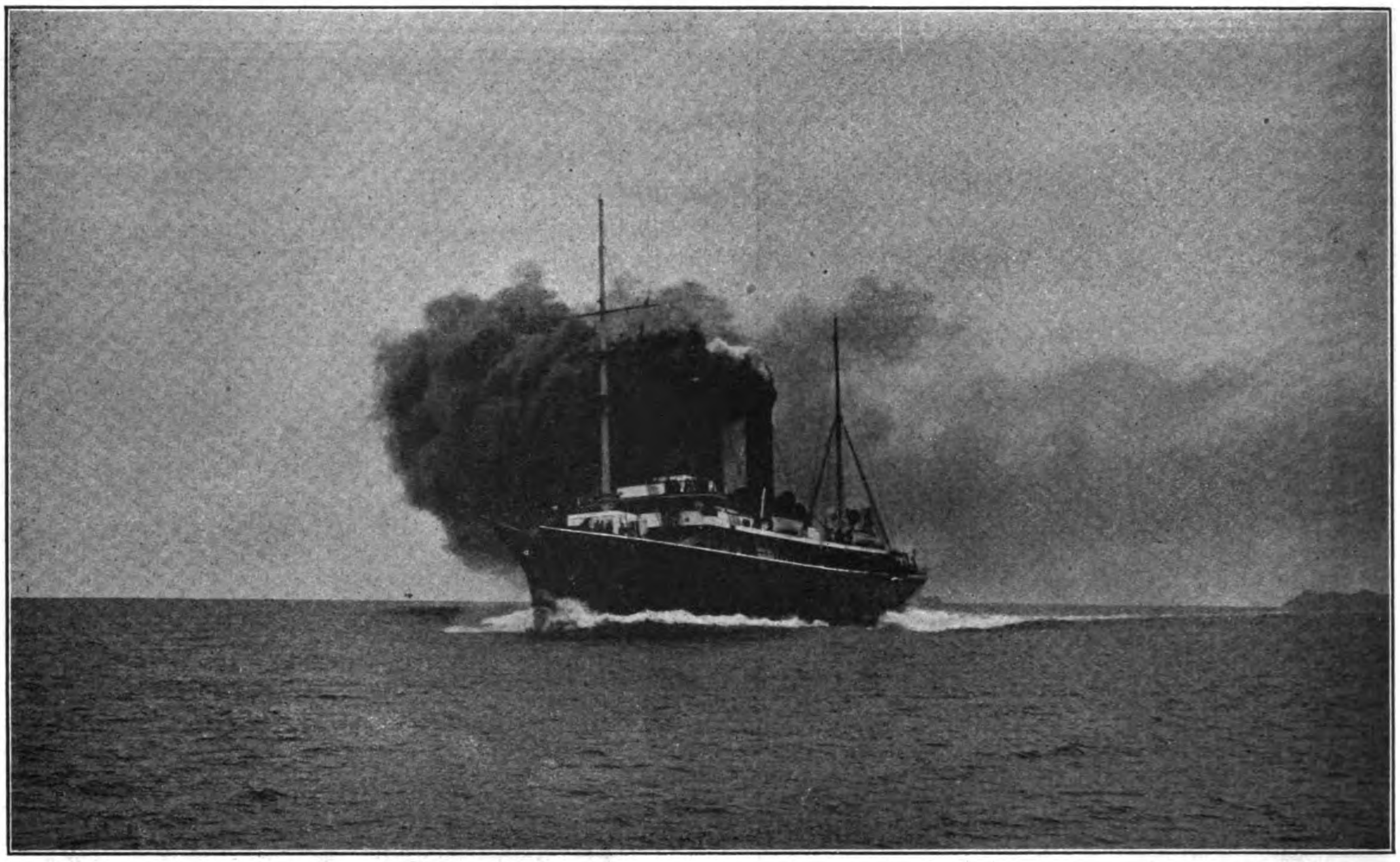
MACHINE AND ERECTING SHOPS OF THE MITSU BISHI COMPANY AT NAGASAKI



TATRGAMI SHIPYARDS OF THE MITSU BISHI COMPANY AT NAGASAKI



150 TON CRANE AND AKONOURA ENGINE WORKS OF THE MITSU BISHI COMPANY OF NAGASAKI



IMPERIAL JAPANESE VOLUNTEER FLEET STEAMER "SAKURA-MARU."—Built and engined by Mitsu Bishi Dockyard and Engine Works, Nagasaki, October 1908, to the requirements of the Imp. Japanese Government Rules.—Length, 335 feet 0"; Breadth, 43 feet 0"; Depth, 31 feet 6"; Gross tonnage, 3200 tons; Displacement, 3880 tons; Engines, Parsons' Three Shaft Steam Turbines; Boilers, Miyabara's Water Tube Boilers (6); I. H. P., 8500; Speed, 21 knots.; Shipowners, Imperial Japanese Marine Association; Armaments, 2 6-in. guns, 6 12-ponnders; Wireless Telegraph on fore mast; 2 search lights, each 20". (This photo was taken on her full speed trials which took place on 26th September, 1908)

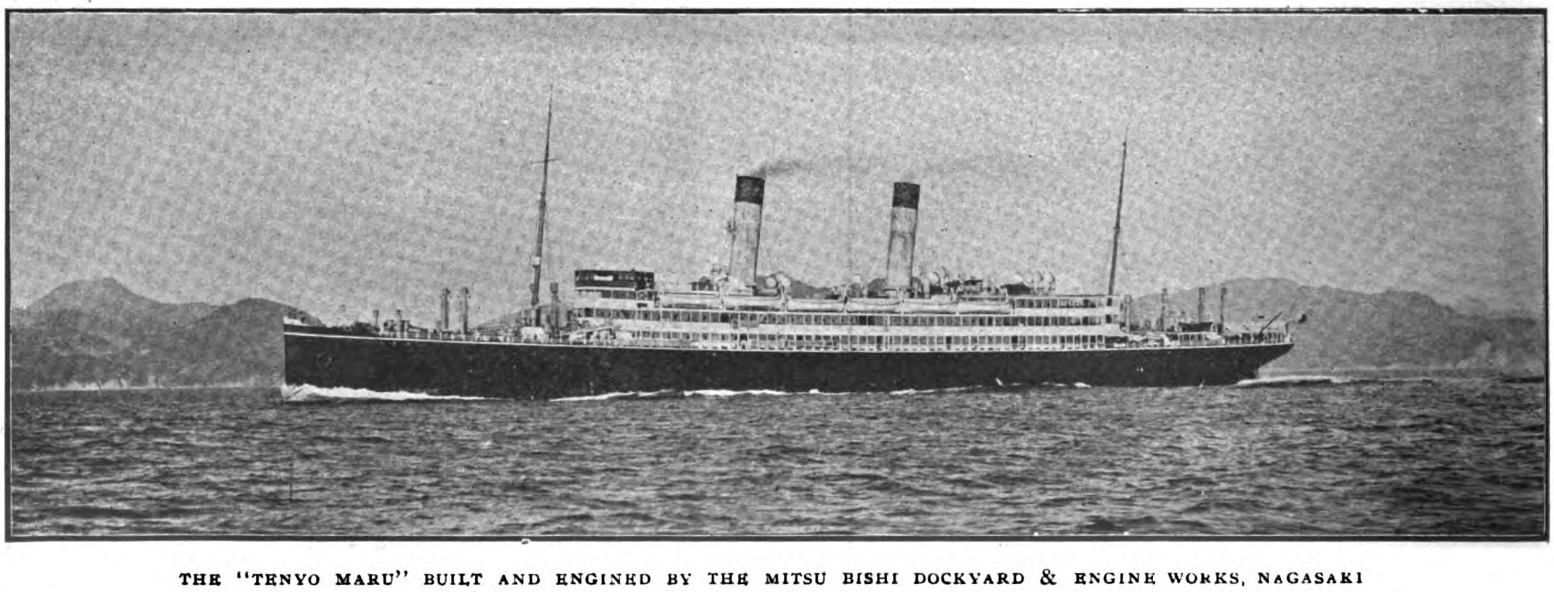
them from the racks and passing them to the trucks for conveyance to the platers' sheds, etc.

To facilitate the conveyance of materials there are over two and a half miles of rails in the yard.

Ship-Platers and Fitters' Department.—Dealing with the separate departments, one naturally begins with the moulding loft, where the work of construction is begun in the case of all ships. The length of this loft is 380 ft., and its width is 70 ft., the roof being of light steel principals with corrugated iron on the purlins, and ample daylight being admitted by glazed top and sides. The space below the loft is partly used as a scribe board and partly as a platers' machine shop.

In the frame bending shop, which is about 140 ft. square, there are two angle furnaces, each 66 ft. long, one plate furnace 30 ft. long, and two angle bevelling machines, with about 4,800 sq. ft. of cast iron blocks for setting the frames, as well as the scribe boards for laying them out.

The platers' machine shops, which cover an area of over 54,070 sq. ft., are equipped with 14 punching and shearing machines, ranging up to tools which shear 1½ in. plate and punch 1½ in. holes in the same thickness, while the gap is 36 in. enabling plates 6 ft. wide to be worked on. There is one hydraulic manhole punch capable of working holes 28 in. by 20 in. There is a large hydraulic flanging machine for setting plates for the keel and garboard strake as well as for stiffening flanges in bulkheads, which is capable of dealing with plates up to 24 ft. long, and up to the thickness of 1 in. There are three sets of bending rollers dealing with plates up to 25 ft. long. The planing machines number eight, and are all of considerable capacity. For straightening plates there is one mangle with solid steel rollers, taking plates 6 ft. wide and 1 in. thick. There are also plate scarphing, joggling, hydraulic bar cutting and other machines. There are



THE "TENYO MARU" BUILT AND ENGINED BY THE MITSU BISHI DOCKYARD & ENGINE WORKS, NAGASAKI

nine countersink drilling machines. Almost all of the tools in this shop are of British make, and the majority of them are directly driven by electric motors.

The beam bending shed is 90 ft. long by 35 ft. wide, and in it there are one beam bending and punching machine, two beam bending machines, one beam bending and angle cutting machine, one angle and channel cutting machine, two cold iron saws, etc., all operated by electricity.

The ironworkers' shed is on the south side of the yard, and contiguous to the building berths. It is 85 ft. long by 65 ft. wide, and contains one angle cutting and plate and angle planing machine, one countersink drilling machine, one plate bending and straightening machine, two plate straightening and flattening machines, two punching and shearing machines, etc.

The blacksmithy is 262 ft. long by 40 ft. wide. In it there are 35 smith fires, the blast being supplied by three Root's blowers. There are ten steam hammers ranging up to 20 cwt., and one 5-cwt. steam striker; also three rivet-making machines, the largest of which is capable of turning out three tons per ten hours.

The angle smith shop, 175 ft. long and 40 ft. wide, contains 28 fires with two centrifugal blast fans, driven by electricity.

The galvanising shop is adjacent to the blacksmith shop. The building is 100 ft long. and 40 ft. wide. There are five zinc baths, the largest being 22 ft. by 2 ft. 2 in. by 5 ft., one refining furnace, and four water baths.

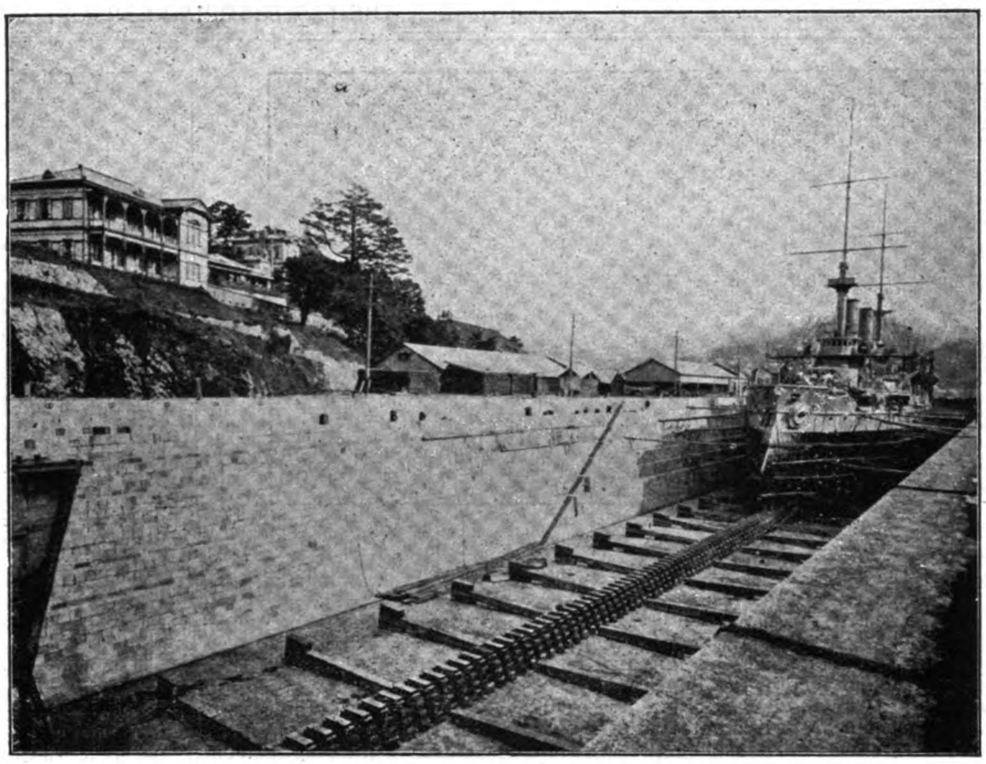
The machine shop is placed contiguous to the building berths. The shop is 140 ft. long by 60 ft. wide. There are fourteen drilling machines of various types; also the same number of lathes of numerous kinds, boring and turning machines; shaping, slotting, milling and surface planing machines; cold iron band sawing machines, Solber patent screwing machine, screw cutting machines, bolt and nut screwing machines, lag screwing machine, and emery grinding machines, etc. All the machinery in this shop is driven by two electric motors, each of 40 b. h. p.

Woodworking Department.—As can readily be imagined, in an establishment which turns out first-class passenger steamers the woodworking department is very extensive.

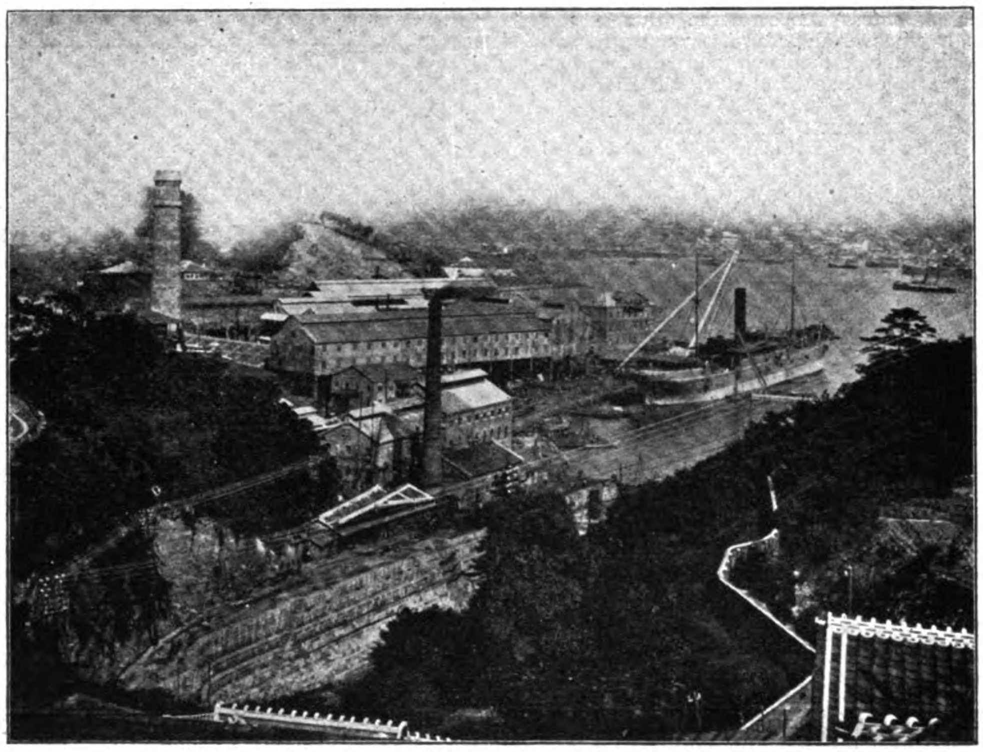
The whole timber department occupies about five acres of ground, about one-third of which is covered in with drying sheds. The timber for the joinery department is accommodated in sheds covering 3,800 square yards. The buildings for deck stowage cover 1,760 square yards.

The saw mill is situated at the extreme north and of the shipyard. The building is a light wooden structure measuring about 100 ft. long by 70 ft. broad. The log department is fitted with three vertical saw frames. In the resawing and dressing of the wood, the principal machines used are two four-side planing machines, one circular saw, endless band sawing machine, reciprocating cross cut saw and dowel making machine, etc. In the saw room there are two saw sharpening machines and one band saw sharpening machine. The majority of the machinery in the mill is driven by electricity.

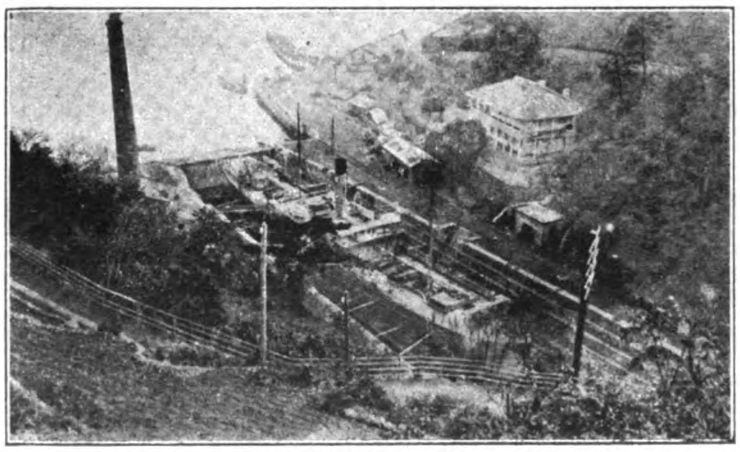
The joiners, cabinet makers and polishers are accommodated in a two-story building situated at the side of No. 1 Dock. It covers a working space of 80,440 sq. ft. The collection of word working tools is complete and represent-



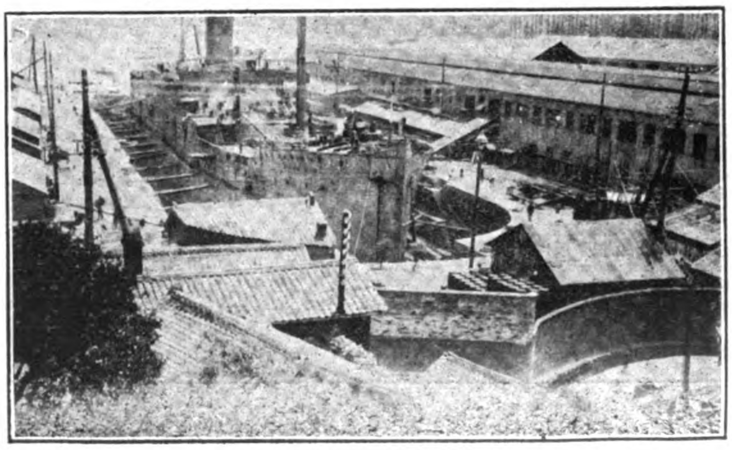
MITSU BISHI'S NO. 3 DOCK (714 FEET ON BLOCKS) WITH H. I. J. M. WARSHIP "IKI" ON THE STOCKS



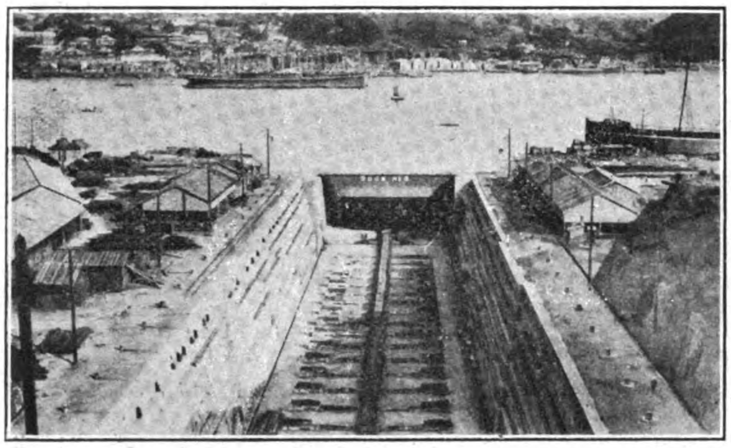
ENGINE WORKS OF THE MITSU BISHI DOCKYARD AND ENGINE WORKS, NAGASAKI, SHOWING 100 TON SHEERLEGS WITH WHICH THE STEAMER "HITACHI MARU," 7,500 TONS GROSS, BUILT AT ITS PLANT, IS BEING EQUIPPED



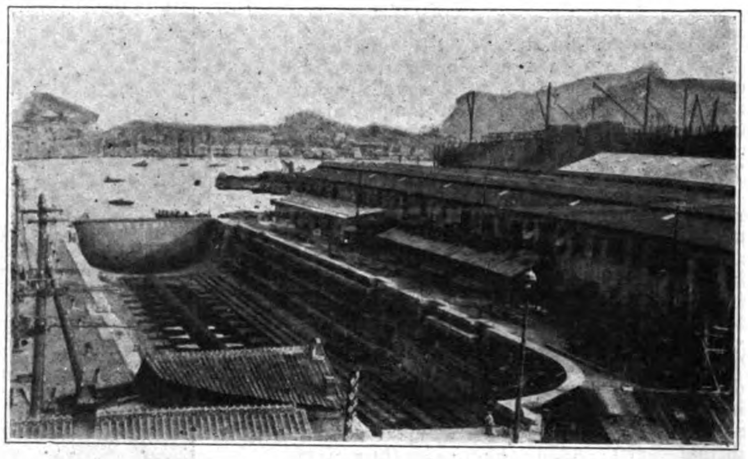
THE NO. 2 DOCK OF MITSU BISHI CO., NAGASAKI



THE NO. 1 DOCK OF THE MITSU BISHI CO.



DOCK NO. 3 MITSU BISHI CO.



THE NO. 1 DOCK OF THE MITSU BISHI CO

ative of the best British practice, including circular saw bench, three endless band saws, scroller fret saw, planing and thicknessing machine; power and hand feed planing machine, three planing and jointing machines, scraping machine, eight moulding machines of various types, dove-tailing machine, five sand-papering machines of different types, buffing machine, two tennoning machines, five morticing machines, rounding machine, two wood turning lathes, wall drilling machine and emery grinding machine, etc. The machinery is driven by four electric motors of 146 total b. h. p.

The carpenters' shops on the other side of No. 1 Dock cover an area of 18,750 sq. ft. and contain planing, moulding and drilling machines; also endless band saw, all driven by electricity.

GRAVING DOCKS AND SLIP.

There are three graving docks, all constructed of granite, and one slip. No. 1 Dock is nearest to the shipyard; then No. 3 and No. 2. The slip is at Kosuge. It may be mentioned here that No. 1 Dock was constructed by the former owner, but was lengthened by the present proprietors in 1895. The following are the principal dimensions of the docks:—

	Feet	*Ins.*
No. 1 Dock.		
Length on keel blocks	510	0
Breadth at entrance on top	89	0
Breadth at entrance on bottom	77	0
Depth of water on blocks at ordinary spring tide	26	6
No. 2 Dock.		
Length on keel blocks	350	0
Breadth at entrance on top	66	0
Breadth at entrance on bottom	53	0
Depth of water on blocks at ordinary spring tide	24	0
No. 3 Dock.		
Length on keel blocks	714	0
Breadth at entrance on top	96	7
Breadth at entrance on bottom	88	7
Depth of water on blocks at ordinary spring tide	34	6

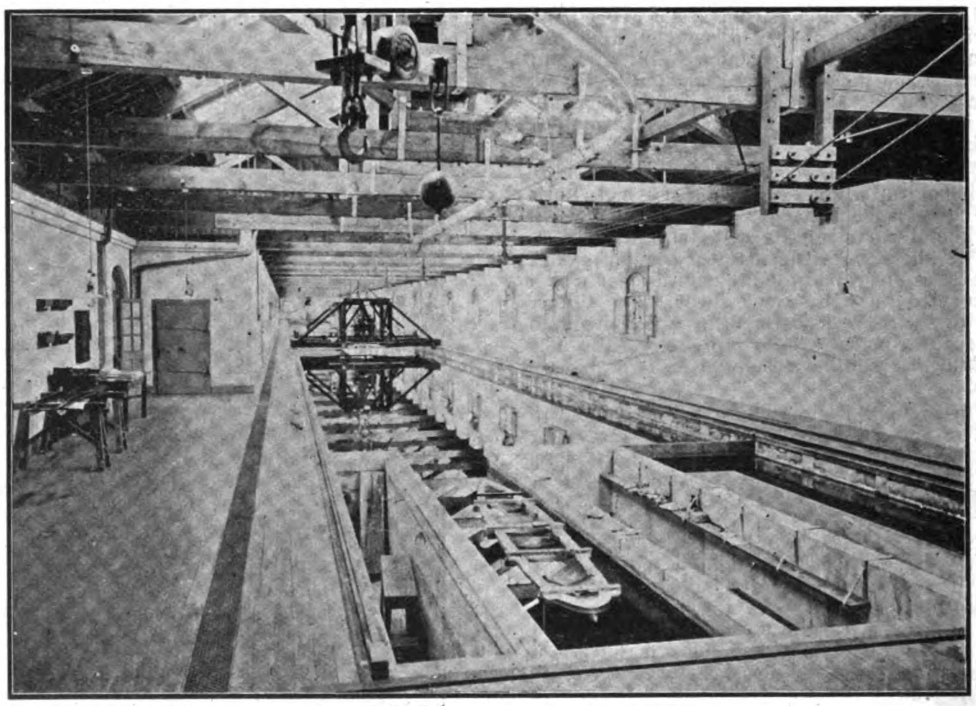
The patent slip is capable of lifting vessels up to 1,000 tons gross. The length of slipway rail is 750 ft., with width 30 ft.

ENGINEERING DEPARTMENT.

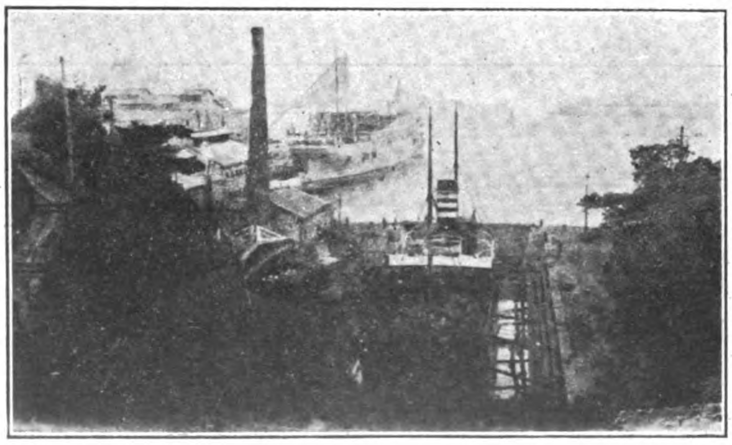
We may now turn to the engineering department, which is arranged at the northern part of the works.

Machine Shops.—Machine shops, which cover an area of about 23,150 sq. ft., contain 124 lathes, three turning and boring machines, five screwing machines, five cutting-off machines, one nut tapping machine, one bolt turning machine, one stud machine, nine planing machines, seven shaping machines, six slotting machines, one keyway cutter, 32 drilling machines three centering machines, one cylinder boring machine, three boring machines, two oil groove cutting machines, 15 milling machines, one nut side facing machine, two band sawing machines, one circular sawing machine, and 16 grinding machines.

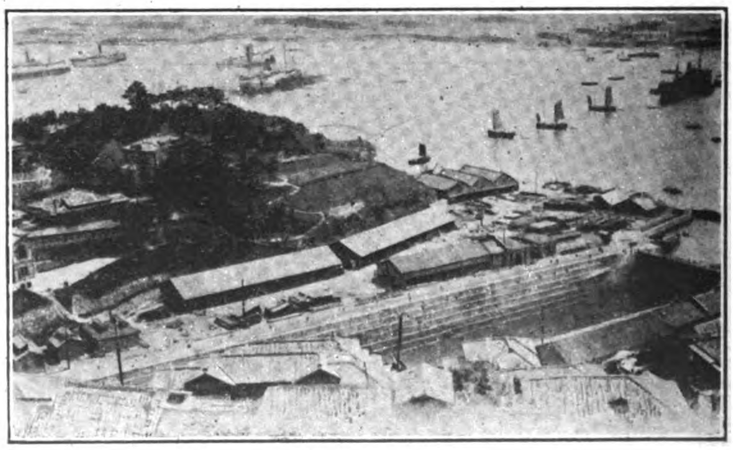
Of the above, special mention should be made of an electrically driven quadruple geared crank shaft turning lathe, having a height of centres 54 in., length of bed 42 ft., and admitting between centres 27 ft. 3 in., two treble geared shafting lathes, each having a height of centres 20 in. and length of bed 36 ft. 6 in., and admitting between centres 28 ft. (these, having



EXPERIMENTAL TANK AT THE MITSU BISHI WORKS

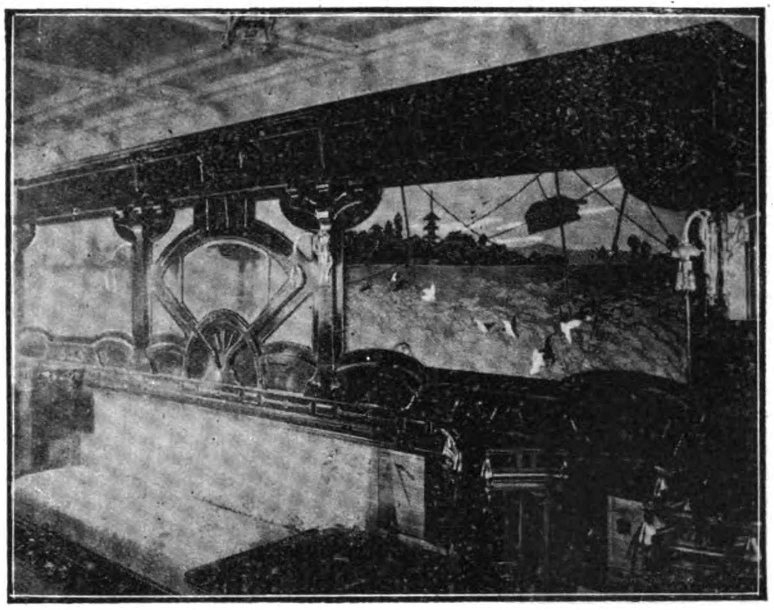


THE MITSU BISHI DOCK NO. 2, NAGASAKI

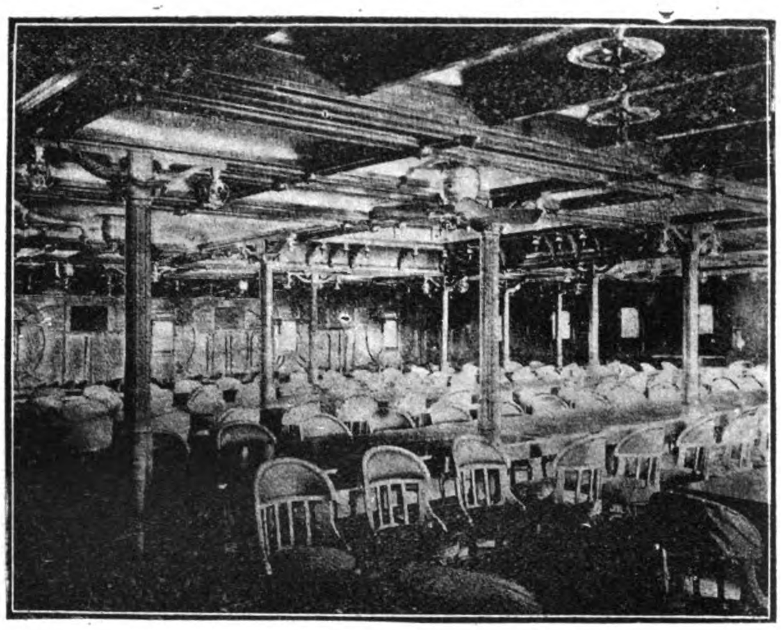


THE NO. 3 DOCK OF THE MITSU BISHI CO.

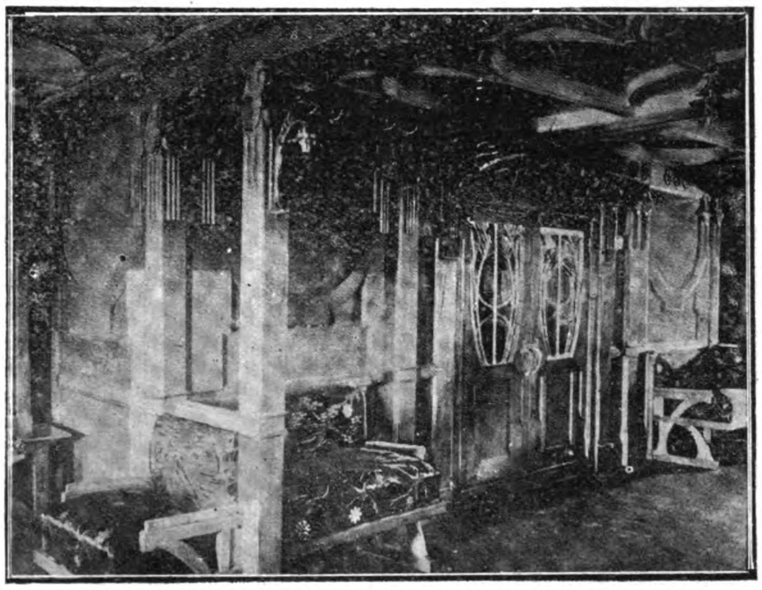
INTERIOR VIEWS OF S. S. TENYO MARU



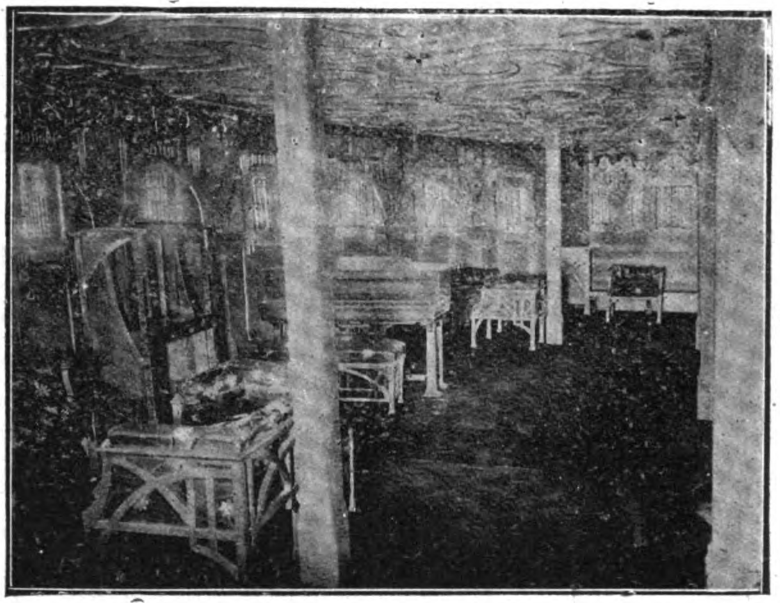
LOUNGE



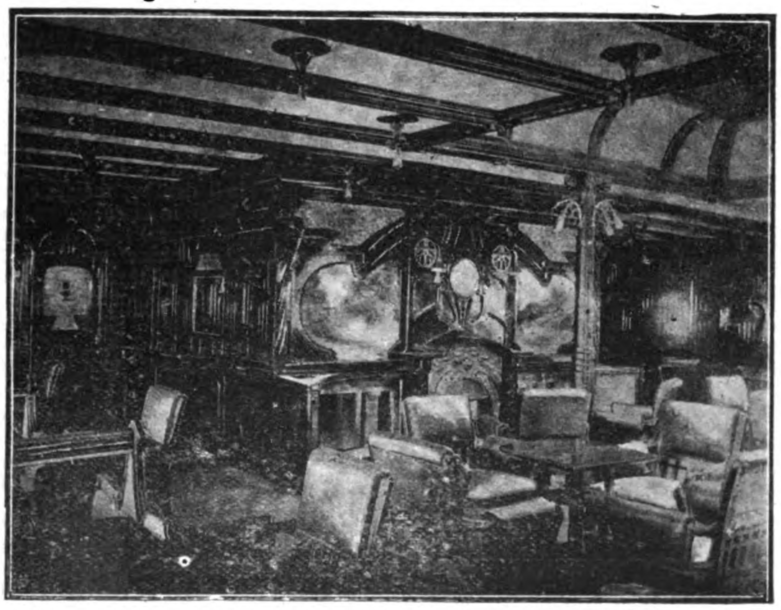
IST CLASS DINING SALOON



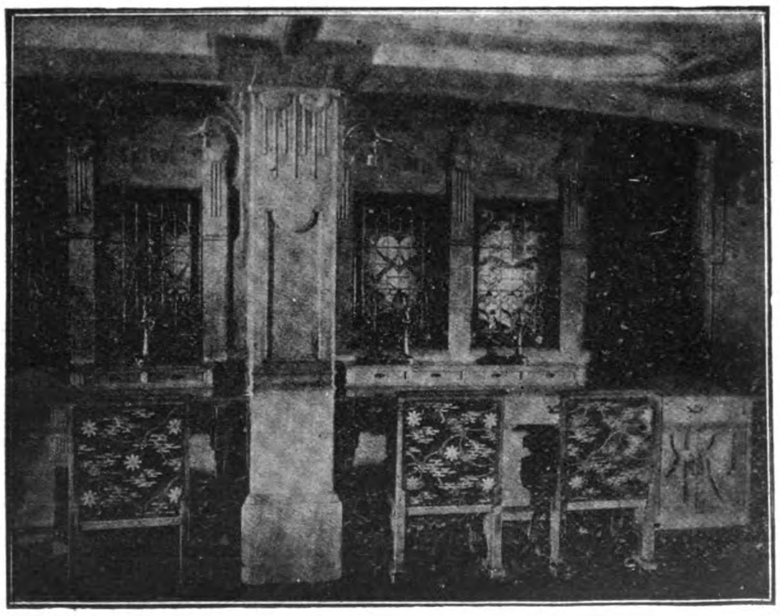
READING ROOM, TENYO MARU



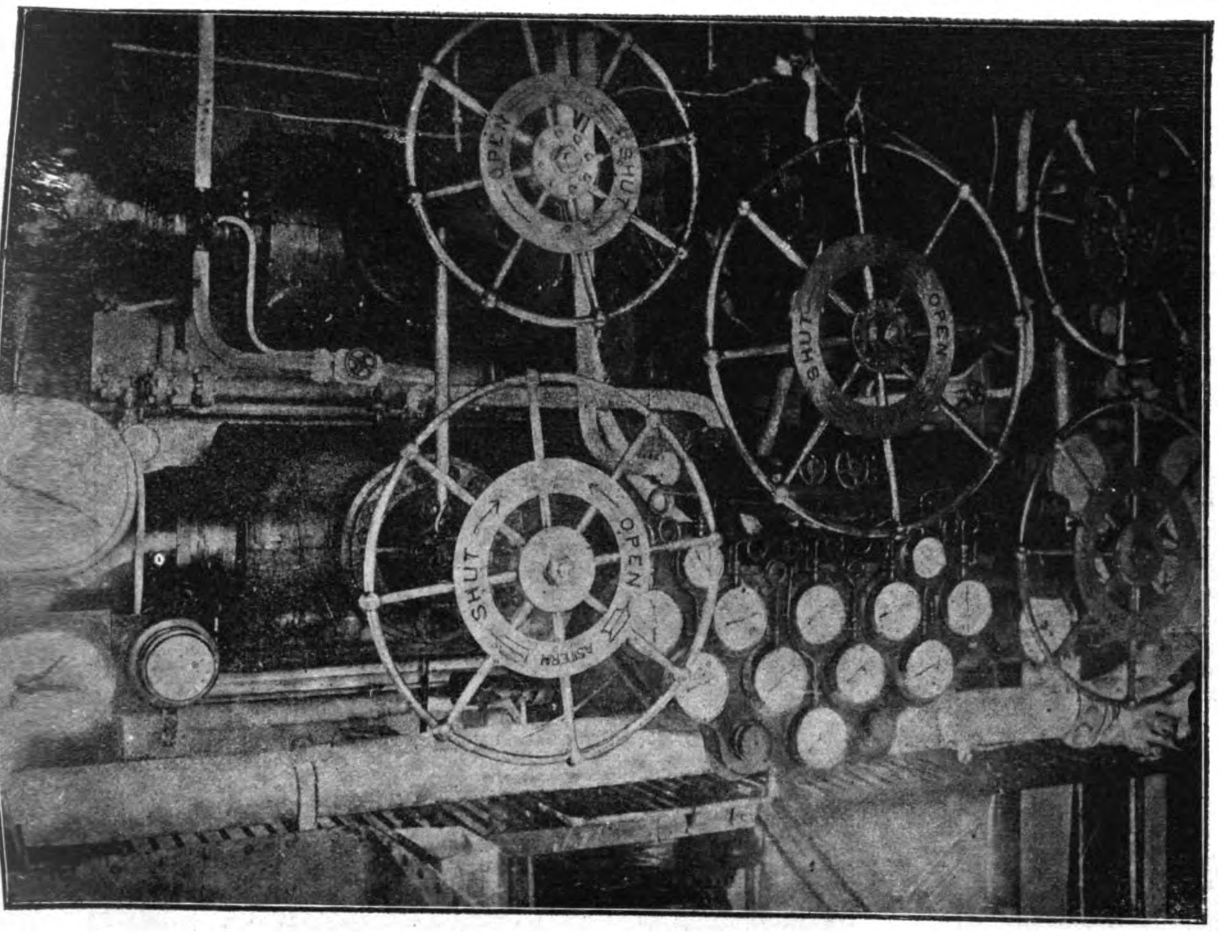
DRAWING ROOM



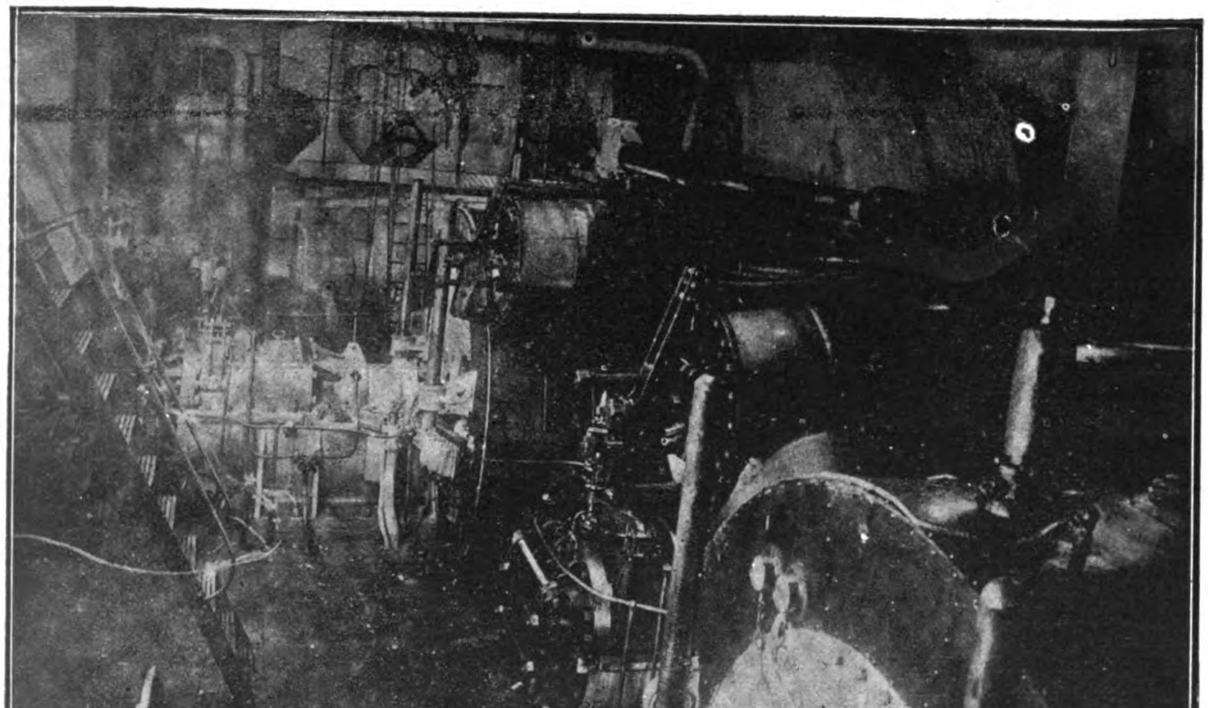
SMOKING ROOM



READING ROOM



VIEW OF ENGINE ROOM, TENYO MARU



ANOTHER VIEW OF ENGINE ROOM, TENYO MARU

a common centre line when combined together, are capable of turning up to 68 ft. 6 in.); one electrically driven vertical cylinder boring machine, capable of boring cylinders up to 100 in. in diameter; one electrically driven double-headed universal horizontal drilling boring tapping, studding and milling machine, commanding 10 ft. vertically and 20 ft. horizontally, with spindle 5¼ in. in diameter; also one horizontal and vertical planing machine, having a horizontal stroke of 21 ft. and a vertical stroke of 18 ft., driven by 25 b. h. p. motor. The machine shop is equipped with one 20-ton, one 15-ton and three 5-ton electric overhead travelling cranes.

Turbine Shop.—The turbine shop, which is 243 ft. by 102 ft., contains four lathes, one turning and boring mill, two planing machines, one slotting machine, one turbine machine, one turbine blade cutting machine, four drilling machines, one turbine cylinder boring machine, one turbine blade nicking machine, one turbine packing strip cutting machine, one special dovetail milling machine, one special milling device, five turbine blade tipping machines. Special features amongst the above machinery are one large electrically driven quadruple gear double bed lathe for turbine rotor turning, having a height of centres 68 in., which may be raised to 79 in. by using a lever, and length of bed 51 ft., admitting between centres 36 ft.; one electrically driven pit planing machine, capable of planing 36 ft. in length, 14 ft. 6 in. in width and 7 ft. 6 in. in height; one electrically driven turbine cylinder boring machine, to bore up to 13 ft.; and one electrically driven powerful slotting machine, having a stroke of 48 in.

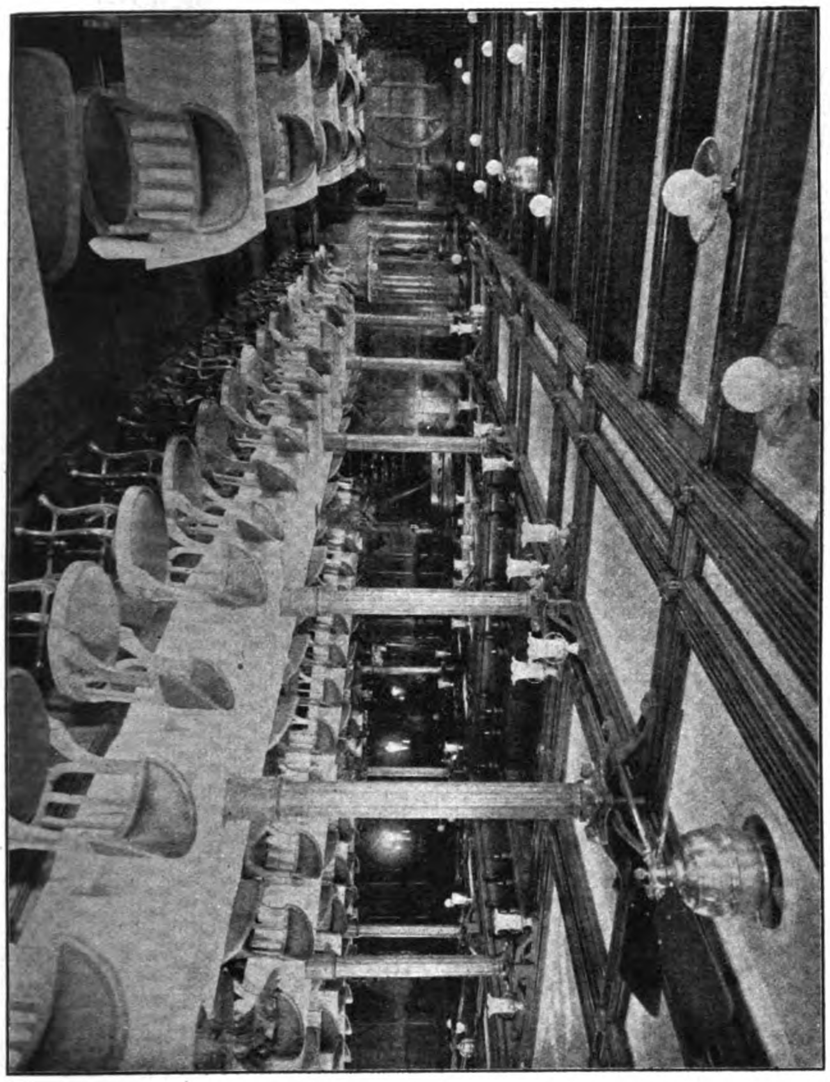
The machinery in this shop is all driven by electricity. There are two 50-ton and one 60-ton electric overhead travelling cranes in the shop.

Electing Shop.—Electing Shop and Machine Shop.—The building is 67 ft. 11 in. by 116 ft. 2 in., and is very lofty. There are three main bays, which are occupied respectively as electric shop, electing shop, and fitting shop. The electing shop has sufficient space to erect three twin sets of 8,000 i. h. p. triple expansion engines simultaneously, and is equipped with one 30-ton and one 20-ton electric overhead travelling cranes. The Fitting Shop has one 10-ton crane of the same type.

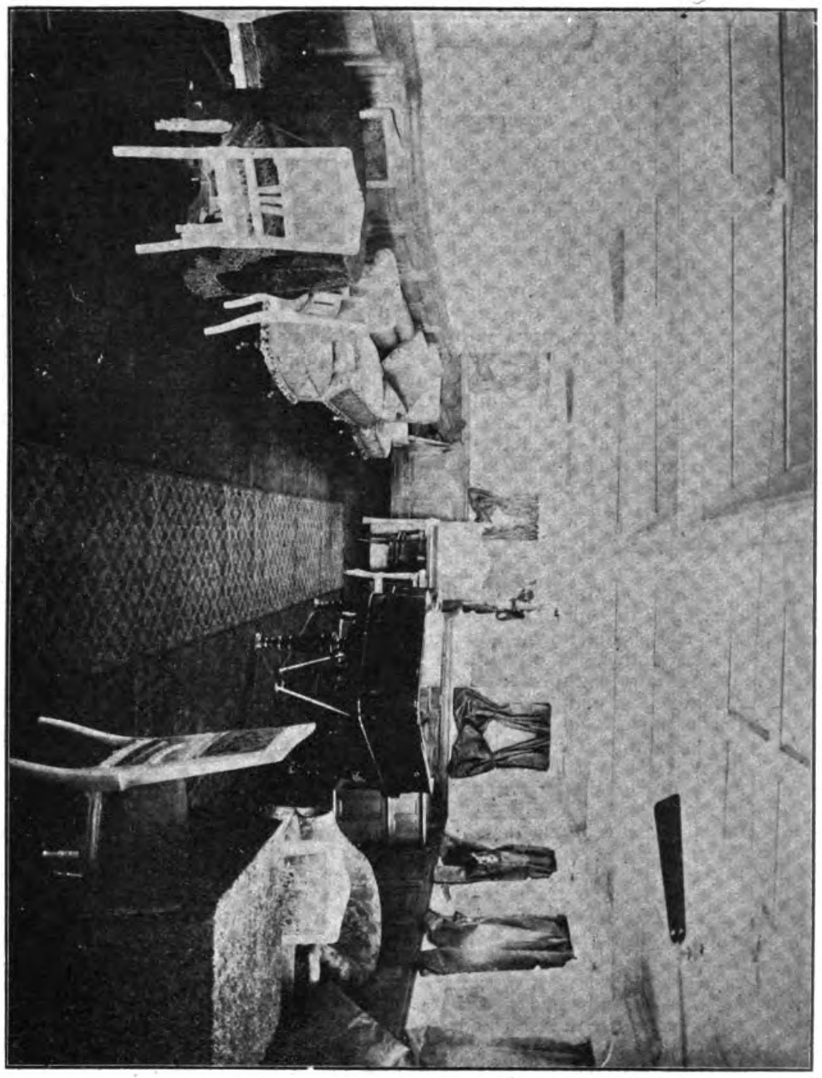
The water testing and shrunk-on work shop, which is 80 ft. by 130 ft., is equipped with a complete set of pumps, gears for water testing and shrunk-on work, and a 20-ton electric overhead travelling crane, and is always in readiness to carry out water testing and shrunk-on work.

Boiler Shops.—The boiler shops adjoin the turbine shop. The buildings cover an area of 53,282 sq. ft. of ground, and are divided into four sheds, one for machine work, one for boiler construction, one for hydraulic riveting, and one for flanging. There are several very powerful tools, notably one 125-ton hydraulic riveter with 40-ton hydraulic crane and 8 ft. gap; one 150-ton hydraulic flanging machine with 4 ft. gap; one vertical plate bending roller, to deal with a plate 11 ft. 6 in. wide and 2 in. thick; one electrically driven boiler shell drilling machine, which can take one double-ended boiler up to 16 ft. in diameter and 18 ft. in length or two single-ended boilers each 16 ft. in diameter and 12 ft. 6 in. in length; one 2-spindle boiler shell drilling machine, to deal with boilers up to 16 ft. in diameter and 18 ft. in length; one 4-spindle boiler shell drilling machine, to deal with boilers up to 16 ft. in diameter and 23 ft. 6 in. in length; one electrically driven lever punching and shearing machine with angle cutter, punches 1½ inch hole through 1½ in. plate, shears 1½ in. plate, and cuts angles 6 in. by 6 in. by 1 in., with punch gap 36 in. and shear gap 33 in.; one edge planing machine, capable of planing plates up to 30 ft. horizontally.

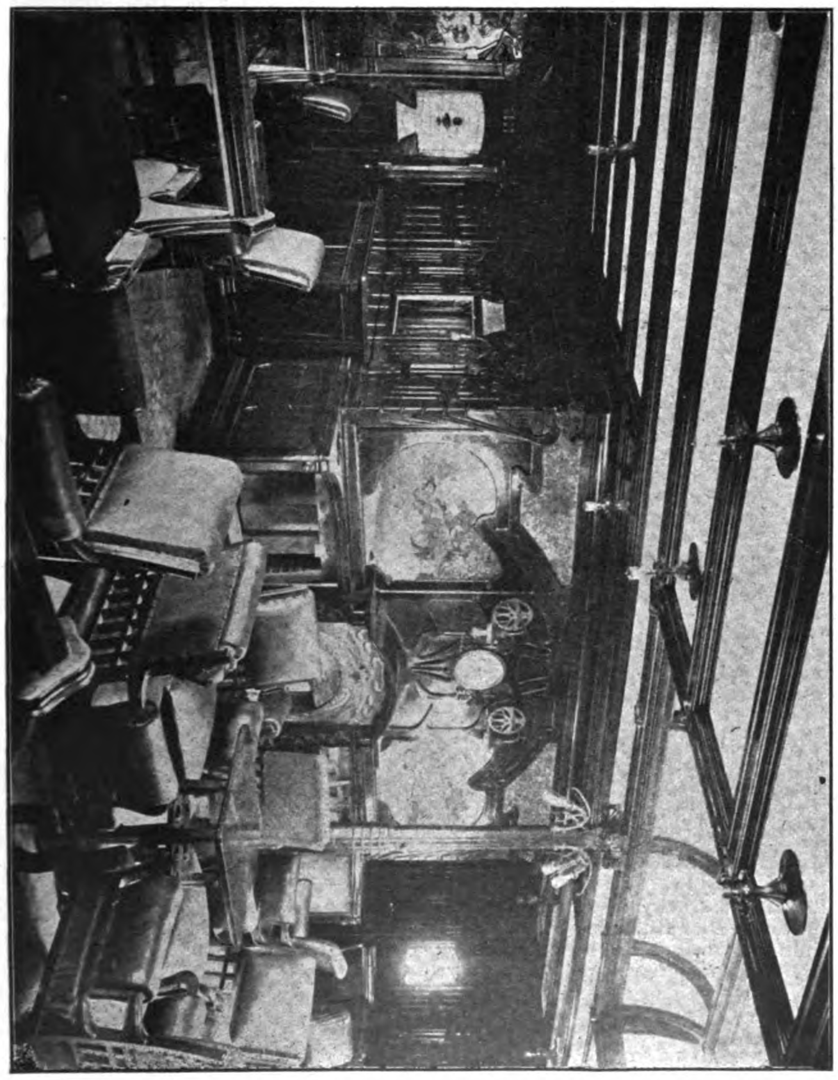
Besides the above, special features of this shop are: one large 30-ton portable hydraulic riveter with 7-ft. gap; one oval and round hole cutting and marine boiler flange and flue turning machine, to take boiler end plates from 7 ft. 6 in. to 17 ft. in diameter; and one portable electrically driven drilling and boring machine. For conveyance, the shop is equipped with four 40-ton and one 7-ton electric overhead travelling cranes, two 5-ton hydraulic wall cranes, and 11 hand and wall cranes ranging from 1-ton to 5-ton lift.



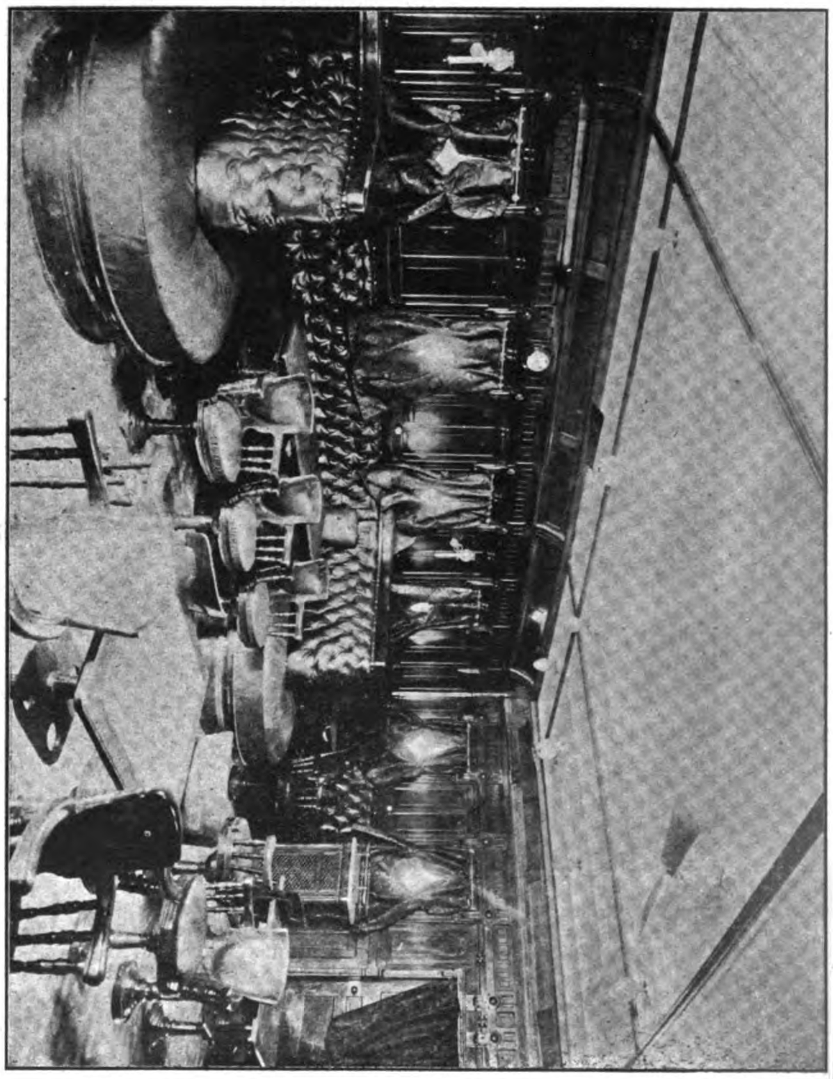
DINING SALOON, CHIYO MARU



SOCIAL HALL, ATSUTA MARU



CHIYO MARU SMOKING-ROOM



SMOKING ROOM, ATSUTA MARU

Smith's Shop.—The engine works smith shop, which is 375 ft. by 60 ft., is a light steel structure with 23 single hearths, five double hearths and seven forges arranged in rows on either side of the building, and with nine steam hammers, ranging from 1¼ tons to 7 tons, arranged in centre line. There are 5-ton, 10-ton and 20-ton air furnaces. The shop is equipped with 12 cranes ranging from 1½ tons to 20 tons. There is also one steam driven plate shearing machine.

Copper Smith Shop.—The copper smith shop, a temporary building of 144 ft. long by 72 ft. wide, is equipped with one hydraulic pipe bending machine, one upright drilling machine, one horizontal redial drilling and tapping machine, one flanging, rolling, straightening and circular cutting machine, one punching machine, one capstan lathe, one hack saw one air hammer, one plate bending roll, one pipe threading machine and one shearing machine. There are 12 hearths, the blast being supplied by Root's blower with 31 b. h. p. electric motor and capable of supplying 640 cubic ft. of air per minute.

Foundry.—The foundry is situated to the north of the machine shops. It consists of two main parts: iron and steel foundry and brass foundry. The iron and steel foundry is 310 ft. long by 102 ft. wide. The equipment includes a 2-ton Siemen's steel gas furnace, four cupolas with a casting capacity of 50 tons, one annealing furnace and three drying furnaces, each 20 ft. long and 16 ft. wide, and one sand mill. Two 15-ton and one 30-ton electric overhead travelling cranes and 14 3-ton radial cranes are distributed conveniently. There are six moulding pits, the two largest being 25 ft. by 30 ft. by 7 ft., and 20 ft. by 20 ft. by 12 ft.

The brass foundry is 100 ft. long by 102 ft. wide, containing two Stone's manganese air furnaces of 8-ton and 5-ton capacity, with moulding pit of 12 ft. by 12 ft. by 7 ft. on iron and steel foundry side, so that the heavy overhead cranes in the iron and steel foundry may be utilized for this pit. Six brass crucibles of forced draft and four of natural draft, each of 200 lbs., and two drying ovens. There are eight radial cranes distributed over the foundry, each of 3 tons capacity. At the corner of the Brass Foundry is the Core Shop.

The foundries are completely self contained in every sense, the moulding boxes and plates, core bars and core irons, etc., being all made there. Adjoining the foundries there are the requisite stores for metal, sand, furnace coal, coke, etc.

The pattern shop, which is a brick building, 180 ft. long by 70 ft. wide, is equipped with one circular and one band saw, one planing machine and four wood lathes, all driven by electricity. The first floor is used for storing the patterns; there is also at the back a spacious pattern store for large old patterns.

RIGGING AND SAIL LOFT.

The rigging and sail loft is a two story wooden building, 100 ft. by 50 ft. The ground floor is occupied by the riggers, where all rigging ropes, blocks, tackles and other materials required by them are prepared. The first floor is entirely used by sail makers.

ELECTRIC SHOP.

The electric shop comprises one wing of the erecting shop, the ground, first and second floors, covering a working area of about 22,200 sq. ft., for production of all kinds of electrical machinery and fittings, especially Parsons' turbo-generators.

There are over 50 machines of the most improved and latest type, capable of undertaking both marine and land work. There is also an electro-plating department in this shop.

GIANT CRANE.

On the jetty, for shipping engine and boilers, etc., from the engine works, there is a 150-ton hammer-head type electric giant crane, designed by Messrs. Applebys Ltd., of Glasgow and London. It consists of a square tower, 136 ft. 3½ in. in height and 40 ft. square at the base, carrying a large roller path on top, upon which a horizontal jib, having a total length of 239 ft. 9⅝ in. is supported. The long arm of jib has a total radius of 156 ft. 6 in. The jib is fitted with slewing gear to revolve it in either direction, and has racking gear and separate lifting motions for the main and auxiliary hoists.

The speed of the various motions are as follows: Main lift, 150 tons at 6 ft. per minute; auxiliary lift, 50 tons at 18 ft. per minute; racking, 150 tons at 30 ft. per minute; slewing, 150 tons one revolution in eight minutes. The total height of lift provided for is 171 ft. 3½ ins., that is to say, 141 ft. 3½ ins. above and 30 ft. below quay level. The total height from the quay level to the top of jib at the centre line of the tower measures 178 ft. 5½ ins. The racking and lifting machinery is placed in a steel-placed house at the tail end of the jib, and assists in counterbalancing the crane. The slewing gear is placed in a steel-plated house over the circular rack at the back end. The operator's cabin of steel plating, containing controller and resistance is placed on the centre line of girders of the jib, and is provided with projecting windows so that a clear view is obtained of the load at all times.

It is connected to the machinery house by speaking tubes, and by telephone to the ground.

The works are also provided with a 30-ton floating sheerlegs.

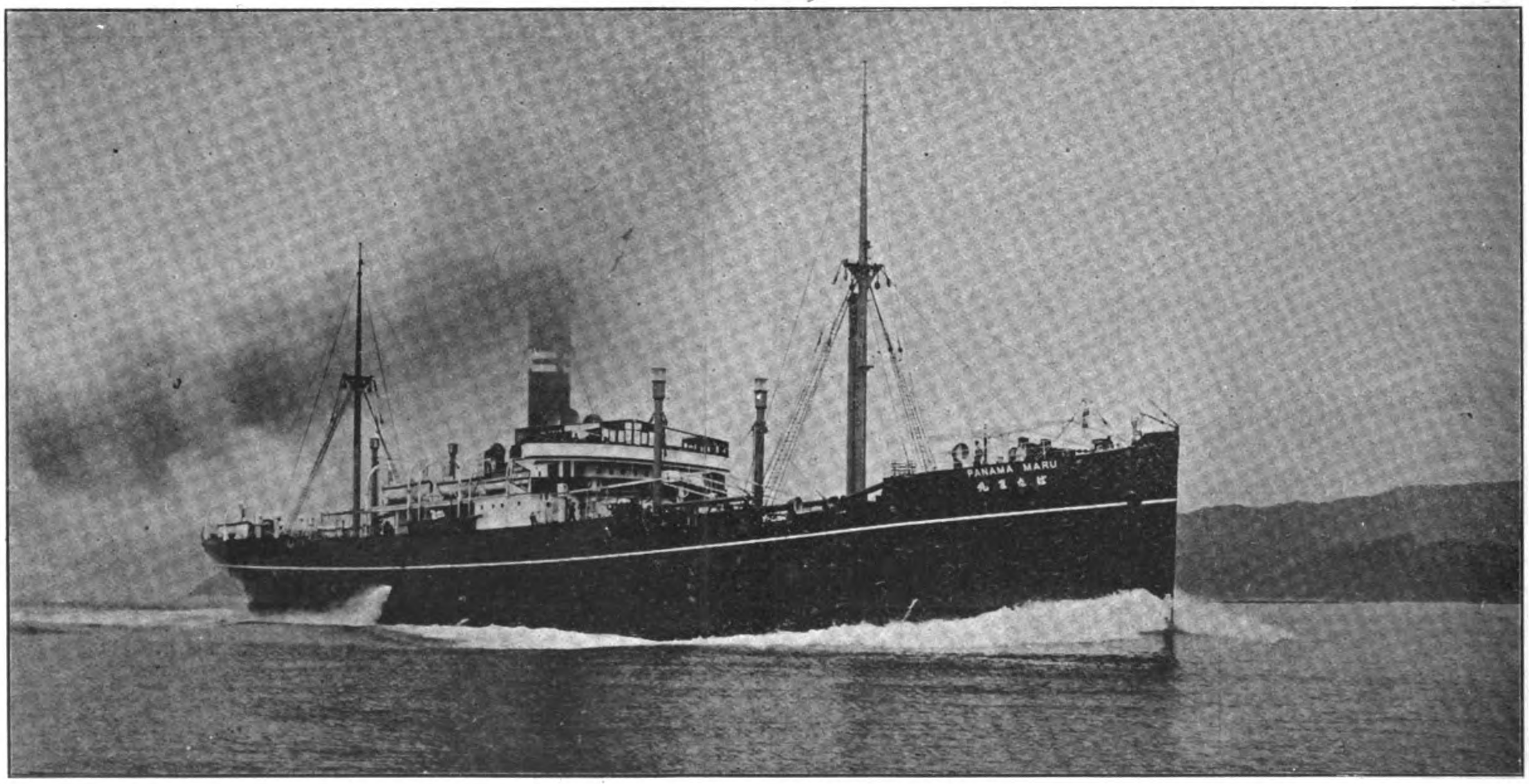
SALVAGE DEPARTMENT.

The works own the salvage steamer *Oura Maru* of 716 tons and 12 knots speed, built especially for the purpose, and fitted with one 18 in. and three 12 in. centrifugal pumps, one 8 in. and one 4 in. special pumps, with all necessary gear of the most powerful description, being always ready with an experienced staff of workmen and divers to undertake salvage work at short notice.

EXPERIMENTAL TANK.

The comparatively recent addition of a ship model experimental tank to the works is but further evidence of progressive character of the management of the concern, and its utility is proved by the fact that since the tank was completed about a year and a half ago, it has been kept fully employed in testing models of ships past, present and projective, and of screw propellers. It is a noteworthy fact that there are only three properly equipped experimental tanks in the world belonging to private shipbuilding firms. The first is that of Messrs Denny, at Dumbarton, the second, that of Messrs. John Brown & Co., at Clydebank, while the third is that now mentioned.

The arrangement and design of this great marine laboratory was entirely placed in the hands of Mr. Archibald Denny, of Dumbarton,



S. S. PANAMA-MARU.—First of three sister-ships being built at the Mitsu Bishi Dockyard & Engine Works, Nagasaki, to the order of the Osaka Shosen Kaisha for its American Service.—Principal Dimensions:—Length, 400′ 0″; Breadth, 51′ 0″; Depth, 32′ 6″; Speed attained at her trials, 15 knots. Type of Engines:—1 set Triple Expansion Engines; Boilers, 4 Single Ended Scotch Boilers fitted with Howden's Forced Draft. Passenger Accommodation:—1st Class 8, 3rd Class, 180.

and is practically a reproduction of the Clydebank tank, with the improvements evolved from experience since the construction of that tank.

Therefore, it is rather interesting to know that the only three private tanks in existence are in one way or another related to each other.

The waterway extends for 430 ft., of which 380 ft. is deep, varying from 12 ft. 6 in. at the north end to 12 ft. at the south end. This fall of 6 in. is gradual, and is for the purpose of drainage when emptying. The breadth is uniformly 20 ft. At the north end there are wet and dry docks. Of the wet docks, one is for storing models, and the other, placed between dry docks, is used for loading and trimming purposes. The towing truck can be run over the centre dry dock and the dynamometer and propeller gears examined from it. The latter must be raised to clear the dock sill. Ballast bags and spare parts are stowed in both dry docks. At the south end there is a sloping beach, 25 ft. long, to assist in breaking up the waves formed by the passage of a model through the water. A recess, however, is left up the middle, to prevent screws or models being run aground. The basin, which is rectangular in cross section, is formed of concrete and puddied clay backing.

The building is of brick, and, besides containing the tank proper, provides accommodation for a drawing office and superintendent's office, with the necessary fireproof record room, etc. In addition to the usual workshops necessary for tank work, there is a well-equipped mechanics' shop. Thus wood and metal work of any kind can be prepared, divulging nothing about the nature of the research work carried on within the walls of the tank.

As it is necessary to keep the temperature of the tank at or about a uniform degree, a complete system of hot-water piping is installed, and the heat is controlled at the calorifiers, of which there are two at the south end, and one at the north end of the building.

The offices and shops are heated on the same system. Light is admitted to the tank by windows on both sides and from the roof, most of which is glazed, while a complete system of electric lighting is installed throughout the building. The models used are generally about 12 ft., although exceptions are made according to the nature of the experiments required.

Like the Clydebank tank, the tank carriage is electrically driven. Current is supplied from the central power station, but, as it would be too irregular if applied direct, it is passed through a motor generator into secondary batteries, from which it is again discharged through the motor generator at a suitable and regular voltage, and delivered to the tank.

The trolley wiring is on the ward Leonard system. The tank carriage with its apparatus, and the model cutting machine and other accessories for the tank work were constructed and supplied by Messrs. Kelso & Co., Glasgow.

TESTING HOUSE AND CHEMICAL LABORATORY.

The works is installed with a Buckton's 50-ton testing machine and a 100-ton chain testing machine; also a well appointed chemical laboratory for the analytical examination of materials.

POWER PLANT.

Electric Plant.—An interesting item in the arrangement of such a large establishment is the system of generating and distributing power. Electricity is used on an extensive scale, not only for the lighting of workshops, sheds, the interiors of ships under construction, and of the yard generally, but also for the driving of the machine tools.

The central power house at Akunoura is fitted with two 500 k. w. turbo alternators direct coupled to Parsons' turbines one 500 k. w. direct current generator coupled to Willans' patent central valve engine, two 100 k. w. direct current dynamos coupled to the same type of engines, two 225 k. w. direct current dynamos coupled to a McIntosh, Seymour & Co.'s vertical cross compound engine, and 300 k. w. direct current dynamo coupled to three-phase induction motor; also two 25 k. w. dynamos coupled to one three-phase induction motor and used for ship lighting, and 100 k. w. booster or motor generator which is used for charging the secondary batteries, having a capacity of 3,000 ampere hours. The steam is supplied by seven Babcock & Wilcox boilers, which also serve as destructors, being used for disposing of the sawdust, shavings, etc., from the various wood-working shops, and the rubbish collected from the interiors of ships under construction.

The sub-station at Tategami shipyard is fitted with two 200 k. w. rotary converters and six 75 k. w. transformers, which convert from 3,450 volts alternating current to 250 volts direct current.

There are in the works about 260 arc lamps of 193,500 watts, and 2,800 incandescent lamps of 16 candle power. The arc lamps are used principally for outside illumination, and in the interior of the larger sheds and shops. The incandescent lamps are used in all the wood-working departments and offices, and for all bench work. They are also used for the internal lighting of ships during construction.

Electricity is largely used for machine tool driving, the power utilized in motors amounting in all to about 4,300 b. h. p. There are over 200 motors in use, varying in power from 200 b. h. p. downwards. In the first place, there are a number of high speed electric overhead travelling cranes in the machine and erecting shops, turbine shops and boiler shops, the largest being 60 tons. A large number of motors are applied to machines in machine shops, turbine shops and boiler shops; also to general shipyard work, such as shop driving, punches, shears, bending, cutting, planing and joggling machines, and to the machines in joiners' shops. Motors are also applied to the lighter class of work, for the purpose of driving portable drills, deck planers and ventilating fans on board ships under construction.

Hydraulic Pressure.—A hydraulic pressure system is installed throughout the shipyard, and is used for actuating the powerful flanging machine and manhole punching machine, several portable punches and riveters, and a number of cranes, etc. The pressure for this system is 1,500 lbs. per square inch. There is also a complete hydraulic installation throughout the engine and boiler shops, which is used for actuating the flanging machine and portable and fixed riveting machines, cranes and lifts. The pressure for this system is 1,200 lbs. per square inch.

Pneumatic Plant.—The pneumatic plant consists of one horizontal steam driven Rand Corliss air compressor, capable of delivering 593 cubic ft. of free air per minute, and two Ingersoll Rand's horizontal electrically driven two-stage air compressors, each capable of delivering not less than 215 cubic ft. of free air per minute, all having a terminal pressure of 100 lbs. per square inch. They are used for the lighter class of work in riveting, drilling, caulking and chipping, etc.

SCHOOL.

The works has its own school in the premises, having accommodation for three classes, totalling 150 boys, where they receive all the necessary elementary education to fit them for various trades and to make good workmen of them. The institution was organized by the goodwill of Baron Iwasaki, on the ground that an elementary, but thorough and sound, technical education is of the utmost importance to make good workmen, that being the main source of raising the industrial standard of the country.

The school is a fine brick building covering about 12,500 sq. ft., with a spacious recreation ground. The basement contains four large mess rooms, two cloak rooms, game lockers, lavatories and scullery. The first floor contains the hall, four class rooms, each with accommodation for 50 boys, one drawing class room, science class room, instrument and apparatus room, and instructors' retiring room and office. Large central spaces, leading to different rooms, both on the basement and first floor, so designed that the boys do not suffer from lack of recreation ground in rainy weather. The institution is open free to the general public, and, after going through the school curriculum, the boys are at liberty either to enter the works as apprentices or to take another course in life.

HOSPITAL.

A fine hospital, having accommodation for 50 patients, is also part of the works equipment. The appointment is perfect, and it is staffed with a number of experienced surgeons and physicians. Here injured employes receive surgical and medical treatment at the company's expense. The employes of the works have the privilege of free consultation, and of obtaining medicines of the very best kind at cost price. The hospital is fitted with an X-ray room and apparatus.

CLUB HOUSE.

The comfort of the employes is never overlooked by the firm, and, to provide for this, there is a large club house outside the Akunoura Works. This Club House is maintained entirely by the firm and is open to all the official staff, each paying only his own actual expenditure. There is, on the ground floor, a large billiard room with refreshment bar and three billiard tables. On the first floor there is a large library and reading room with over 1,500 volumes on all the engineering subjects and mostly of English publication.

PENSION AND SAVINGS BANK.

Pension and savings bank system, with other benevolent schemes, are in existence, to secure the welfare and to encourage thrift amongst the employes. A particularly noteworthy feature in connection with the workmen is styled "The Workmen's Protection Scheme," and has been in force since the end of 1897, with very satisfactory results. The scheme is based on the principle of an insurance system, and comprises three sections, viz.: "Injury," "Pension" and "Sick, Marriage, Birth and Death." For "Injury," the compensation extended to the workmen varies from £5 to £300, according to class and rate of wages to which they belong and to the nature of the injury, and is applied to the families of those who die or are incapacitated through injury received on duty. For "Pension" each employe deposits in the fund a certain proportion of his wage, to which the employers contribute a like amount. The pension granted from this fund to the workmen retiring from old age or other legitimate reason varies considerably, according to the grade and time of service; for example, the pension for those of ten years' standing varies from £9 to £70, according to grade, and for those of 25 years' standing from £40 to £300.

For "Sick, Marriage, Birth and Death," each employe also deposits a certain proportion of his wage, to which the employers contribute a like sum. The benefit accruing to the workmen by this fund varies from 2½*d.* to 2*s.* per day for four months for sickness, 14*s.* to £5 for marriage expenses, 4*s.* to £5 for birth or death of near relatives, and 10*s.* for conscription.

HONORS.

Gold Medals of Honor were awarded to the works at the 5th National Industrial Exhibition held at Osaka in 1903, and at the Tokyo Industrial Exposition held in 1907.

TUNG TAI TSEUNG KEE & CO.

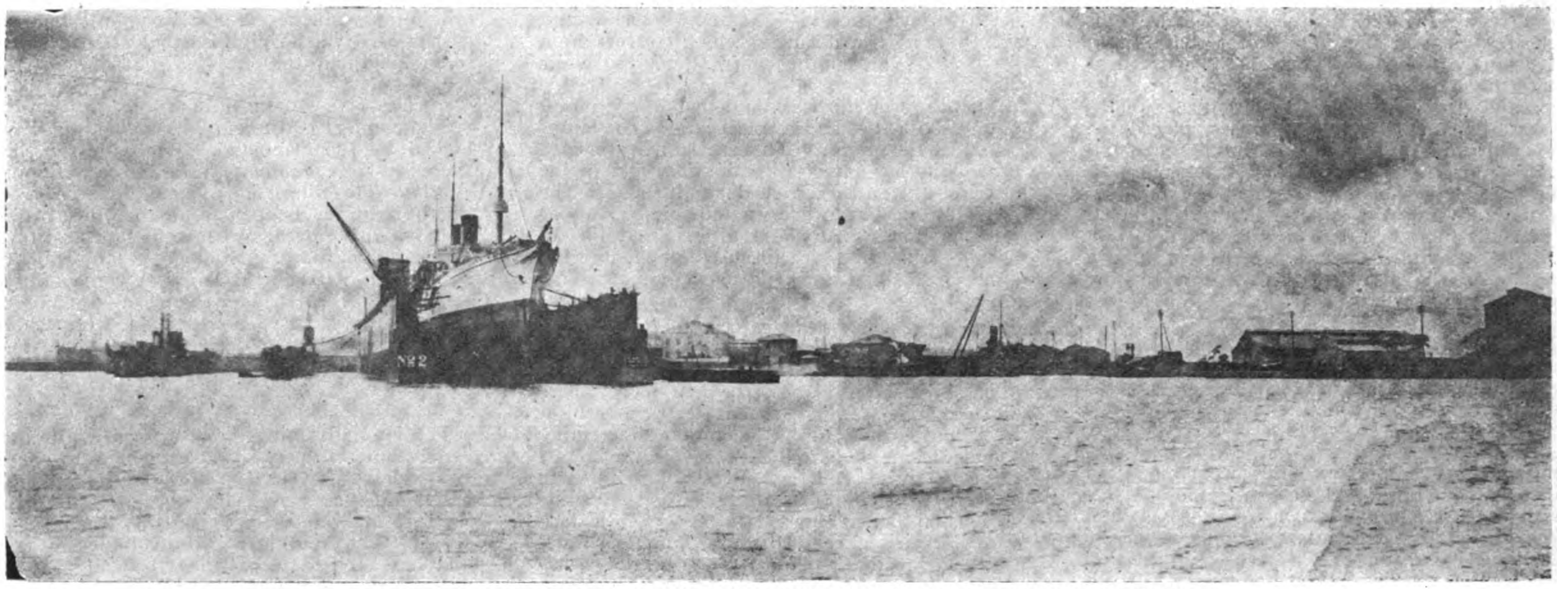
This firm was started by Mr. Choi Chik Nam, in 1897, for the purpose of building and repairing steam launches, river craft, etc. Two workshops, one at Yaumati, and the other at Praya East, Wanchai, afford employment for five hundred workmen. The firm holds contracts from the French Government at Saigon, and is entrusted with the execution of repairs for the Indo-China, the Hamburg-Amerika, and the Japanese lines of steamers. Upwards of a hundred steam launches have been built by this firm for Manila. One launch was 140 feet in length, and fitted with triple-expansion engines. The proprietor, Mr. Lan Fat, received his education in Hongkong, and was afterwards apprenticed as draughtsman to Messrs. Fenwick & Co. for nine years. He was then for nearly two years engineer to Messrs. Marty & Co., until, in 1895, he joined Messrs. Tung Tai Tseung Kee & Co. as manager. In this position he remained for ten years, when he purchased the business.

THE MITSU BISHI DOCKYARD AND WORKS AT KOBE

The Mitsu-Bishi Dockyard and Engine Works at Wada Point, Kobe, were inaugurated on the 8th August, 1905, as another advance by the Mitsu-Bishi Company in their enterprise of Shipbuilding and Engineering. Prior to this date, important preparations for reclaiming the land, constructing a breakwater, and other work had been done. A floating dock of 7,000 tons lifting power, built at the Company's Nagasaki Works, was towed into the basin, and two years later the works stood as one of the most prosperous concerns in the Japanese Empire. To provide for the rapidly increasing business, and extension on a large scale became a matter of urgent necessity, and, before the second anniversary of the works, the keel blocks of a floating dock of 12,000 tons lifting capacity were laid down, and additional permanent steel buildings for workshops were in course of construction.

The No. 2 Floating Dock was launched in November, 1908, and on the 8th December the S. S. *Mishima Maru*, one of the new European Liners of the Nippon Yusen Kaisha Line, 8,600 tons gross, was the first vessel docked. The works are now fully equipped with the latest machine tools and appliances, powerful enough to construct vessels up to 10,000 gross tonnage.

The works, which are situated on the western shore of the harbour of Kobe, just northward of the Wada-Misaki Lighthouse at the entrance of the port, have been laid out on an extensive scale. They cover an area of about 82 acres, and provide room for further extensions. The sea frontage of the works is more than 5,000 ft. long, a part of which has been reserved for shipbuilding berths suitable for the simultaneous construction of seven vessels of over 500 ft. in length.



GENERAL VIEW OF THE MITSU BISHI DOCKYARD & ENGINE WORKS AT KOBE

To the north of the building berths is a basin having an area of about 14 acres, protected by a breakwater of masonry work 1,000 ft. long, leaving an opening for entrance from the north. This opening is naturally sheltered by the shore of Hyogo, which lies at a distance of little over half a mile.

Alongside the basin, a masonry quay wall was constructed for the purpose of mooring vessels under repair, or under equipment with new machinery. A 100-ton steel tripod sheerlegs, by Day, Summers & Co., Southampton, has been recently erected on the foundation laid on the quay wall. There are four strong mooring buoys outside the breakwater, forming a safe deep water anchorage, and, as the establishment is connected with the Wada branch line of the Imperial Government Railway, the works occupy a unique position in this harbour in regard to communication by land and sea.

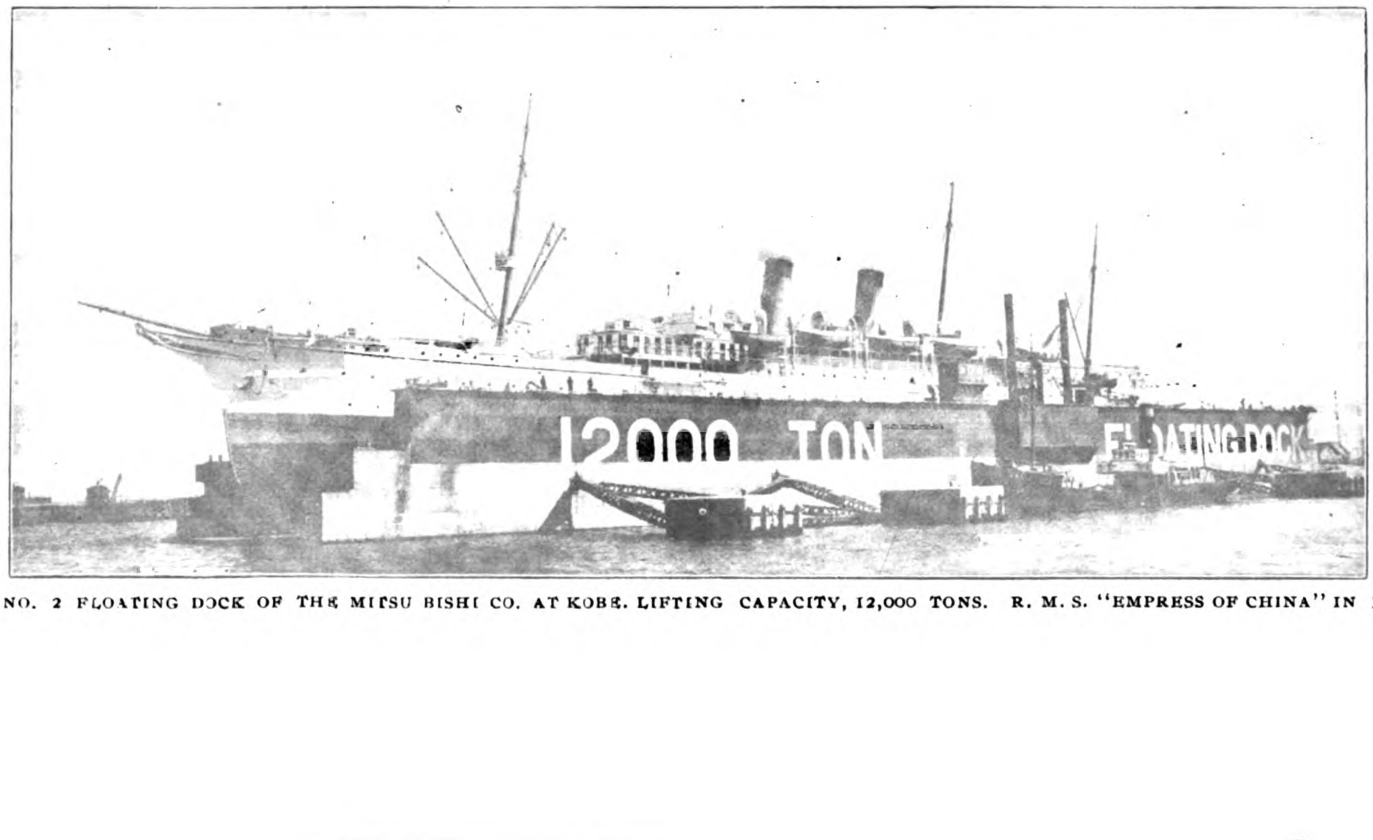
The following are the principal workshops, equipped with electric power and light, each connected by rails which are again connected with the Government railway lines. The dimensions given below against the various machine tools and machinery installed in the respective shops indicate their maximum capacities.:

Machine and Erecting Shops.—28,000 sq. ft., 41 lathes: 15 ft. diameter by 25 ft. 6 in. between centres; 4 planing machines: 18 ft. horizontally by 21 ft. vertically; 12 drilling machines: radial arm, 7 ft.; 6 slotting machines: stroke 9 ft.; 6 shaping machines: stroke 2 ft.; 5 screwing machines: 4 in. diameter by 7 ft. long; 4 milling machines: 15 in. high by 7 ft. wide; 2 cold metal cutting machines, to cut 18 in. deep; 2 electric overhead travelling cranes, to lift 15 tons.

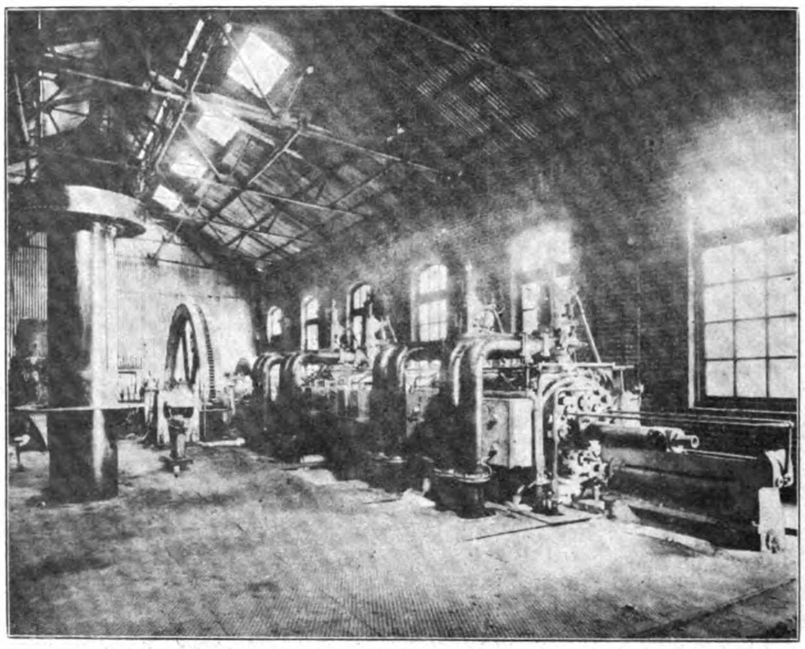
Blacksmith Shop.—15,900 sq. ft.—1,600 ton hydraulic forging press; 6 1-ton steam hammers; 1 gas furnace; 30 forges.

Shipyard Machine Shops.—22,250 sq. ft.—5 punching and shearing machines: to punch 1¼ in. holes through 1¼ in. thick, and shear 1⅛ in. thick; 1 beam and angle bending and shearing machine, for 14 in. beams; 2 planing machines: 28 ft. by 2 in. thick; 2 5-ft. radial drilling machines; 4 radial countersunk drilling machines; 1 set plate bending rollers, for plates 25 ft. long by 1¼ in. thick; 1 set plate straightening rollers, for plates 6 ft. long by 1¼ in. thick; 1 hydraulic keel plate bending machine, for plates 25 ft. long by 1¼ in. thick; 1 hydraulic manhole punching and joggling machine, to punch holes 30 in. by 20 in.; 1 frame bevelling machine, for bevelling angles up to 7 in.; 1 portable pneumatic plant, for working pneumatic hammers, drills, etc.; 1 electric overhead travelling crane, to lift 3 tons.

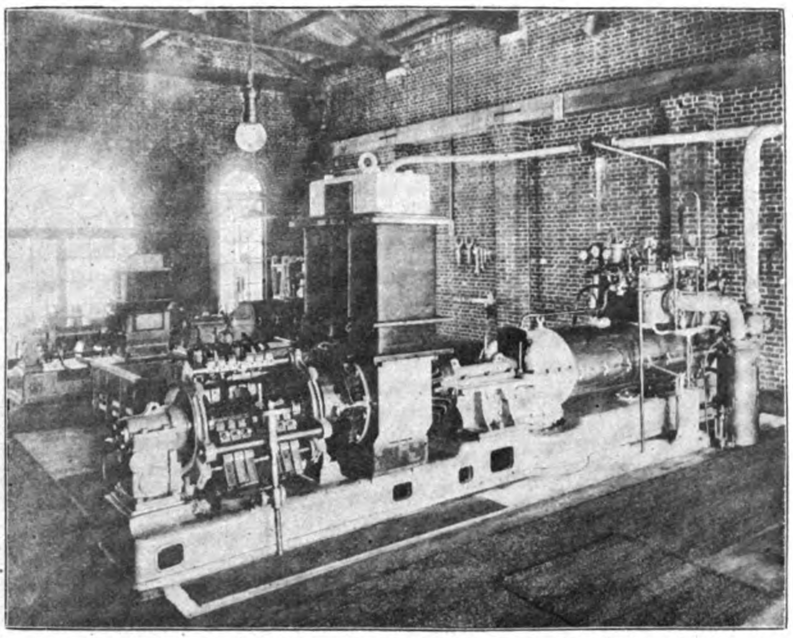
Boiler Shop.—28,750 sq. ft.—6 drilling machines, for boilers 20 ft. diameter by 24 ft long;



THE NO. 2 FLOATING DOCK OF THE MITSU BISHI CO. AT KOBE. LIFTING CAPACITY, 12,000 TONS. R. M. S. "EMPRESS OF CHINA" IN DOCK

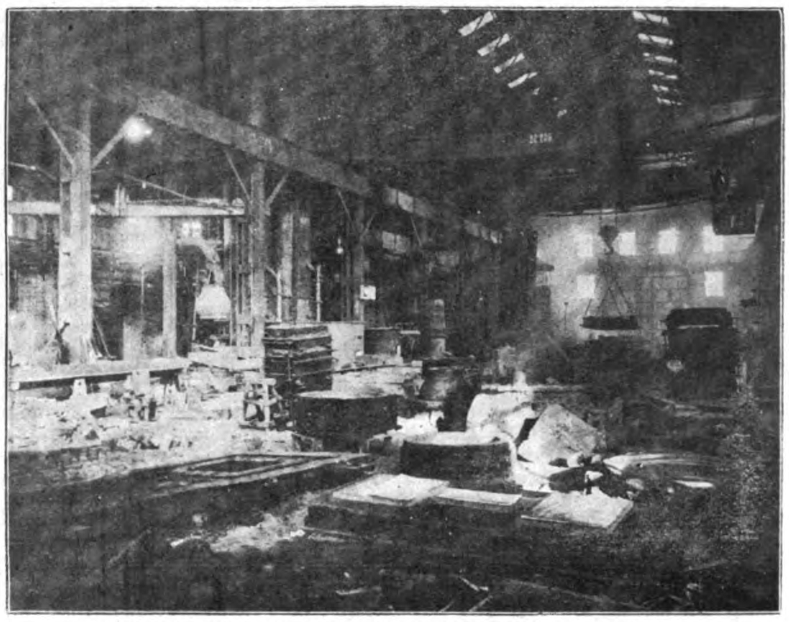


NO. 2 POWER HOUSE AT THE KOBE WORKS OF THE MITSU BISHI CO., 450 B. H. P. COCKERILL TYPE GAS ENGINE

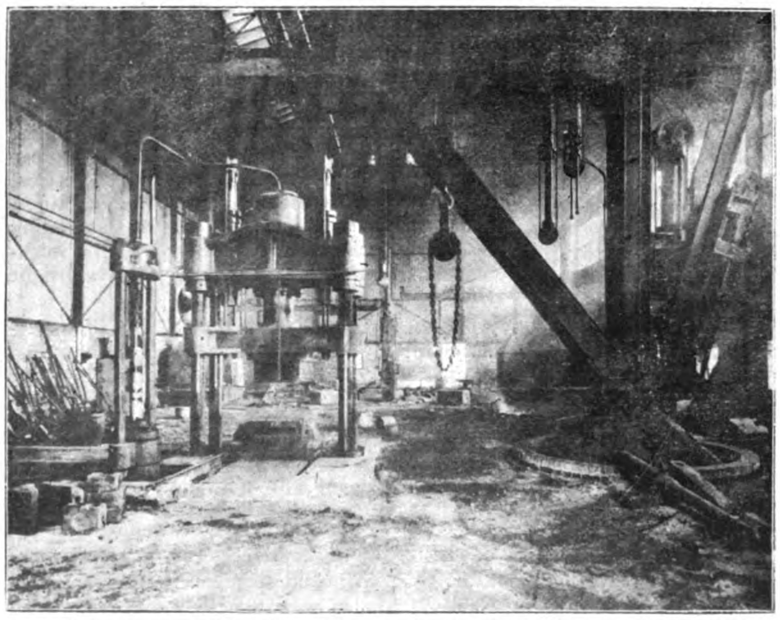


C. A. PARSONS PATENT TURBO-GENERATORS, MANUFACTURED UNDER LICENSE BY THE MITSU BISHI CO.

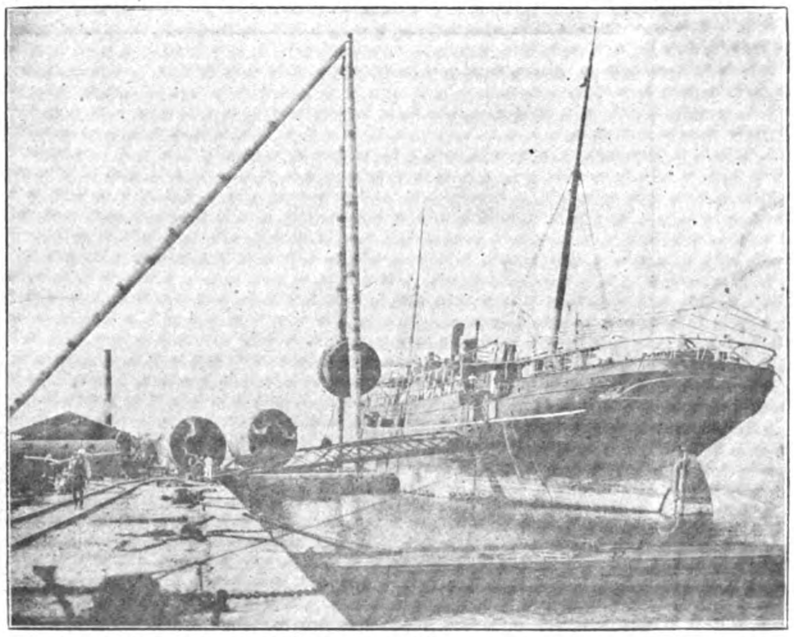
NO. I MACHINE SHOP, MITSU BISHI WORKS, KOBE



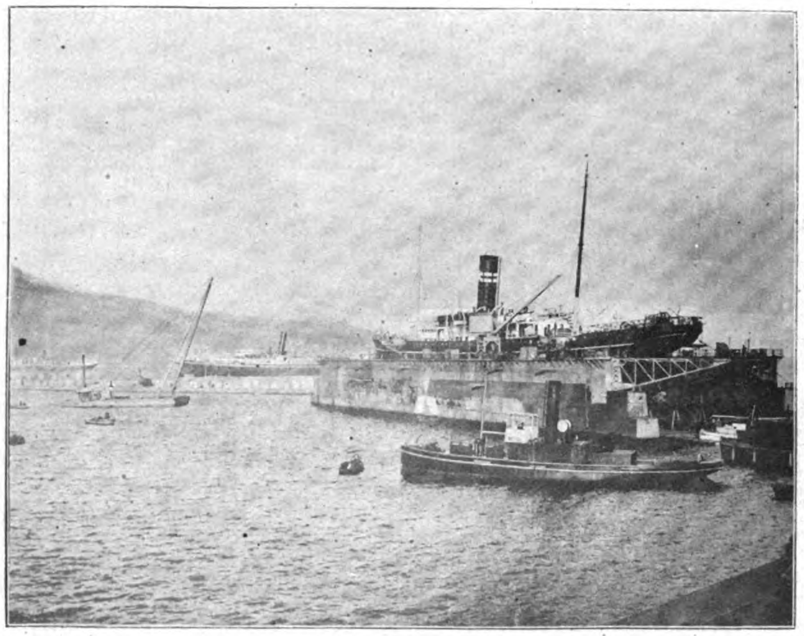
THE FOUNDRY OF THE MITSU BISHI WORKS AT KOBE



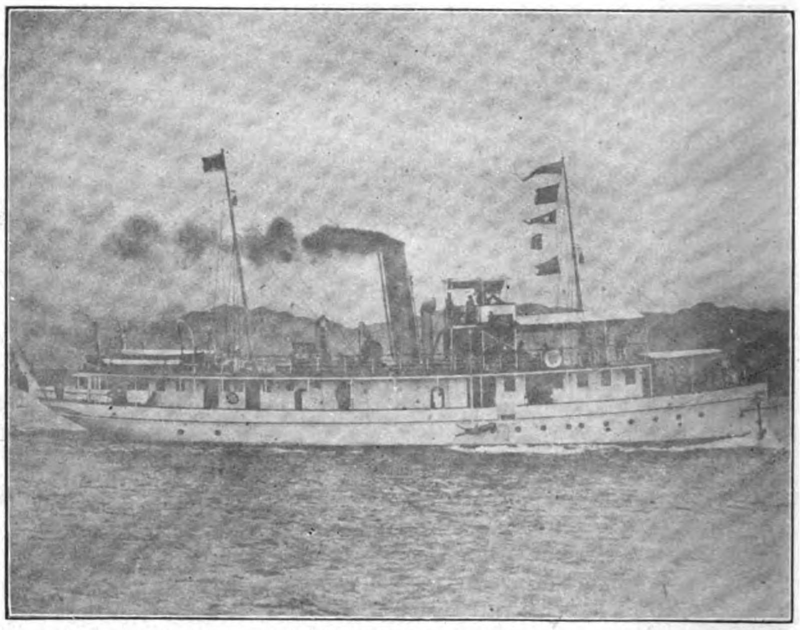
700-TON HYDRAULIC FORGE PRESS IN BLACKSMITH DEPARTMENT OF THE MITSU BISHI WORKS AT KOBE



100-TON STEEL TRIPOD SHEERLEGS LIFTING A BOILER FROM S. S. "TAICHU MARU" AT THE KOBE WORKS OF THE MITSU BISHI CO.



NO. I FLOATING DOCK OF THE MITSU BISHI CO. AT KOBE, 7000 TONS LIFTING CAPACITY



TWIN SCREW STEAM YACHT "MONIJI MARU" 100' × 20' × 10' DEPTH, BUILT BY THE MITSU BISHI WORKS AT KOBE

2 rollers, for bending plates 13 ft. by 2 in. thick; 1 punching and shearing machine, to punch 1½ in. holes through plates 1½ in. thick and shear plates 1½ in. thick; 3 hydraulic riveters, gap 13 ft. 6 in. and 160 tons pressure on rivet; 1 hydraulic plate flanging machine, 150 tons pressure on plate; 1 annealing furnace, 25 ft. by 18 ft.; 3 electric overhead travelling cranes, to lift 50 tons.

Brass Foundry.—120 ft. by 90 ft.—15 crucibles, capable of casting 5,000 lbs at single charge; 2 electric overhead travelling cranes, to lift 3 tons.

Joiner and Carpenter Shops.—10,875 sq. ft.

Pattern Shop.—100 ft. by 70 ft.

Copper Smith Shop.—165 ft. by 40 ft.

Saw Mill.—190 ft. by 35 ft.

Bending Shop.—50 ft. by 60 ft.

Mould Loft.—165 ft. by 50 ft.

Iron Foundry.—180 ft. by 120 ft.—4 cupolas, 10 tons per hour; 3 drying stoves, 27 ft. by 16 ft. by 15 ft.; 3 moulding pits, 20 ft. by 20 ft. by 18 ft.; 3 electric overhead travelling cranes, to lift 30 tons.

Electrical Machinery Shops.—16,800 sq. ft.—3 power presses, 3 ft. 7 in.; 3 notching presses, diameter, 40 in.; 2 field coil winding machines, 2 ft. 9½ in.; 3 squaring shears, for squaring sheets up to 42 in.; 2 circular shearing machines, diameter 3 ft.; 4 milling machines, 36 in. by 9 in. by 20 in.; 1 slotting machine, 8 in. stroke; 1 shaping machine, 28 in. stroke; 12 lathes: 12 in. centres; 3 drilling machines: 23 in.; 3 portable electric drills; 1 vacuum impregnating tank, diameter 4 ft. 6 in. by 8 ft.; 2 portable cranes and hoists, to lift 2 tons.

Power Houses.—Electricity is used for power and lighting purposes in the workshops and offices. There are two generators in No. 1 power house, one of 100 k. w. and one of 150 k. w. capacity, driven by C. A. Parsons' steam turbines. In No. 2 power house, there is a 450 B.H.P. "Cockerill" gas engine, driving 1-300 k. w. generator, built at the works. Gas is supplied by a "Mond" gas producer of 800 B.H.P. capacity, which also supplies gas to the furnace in the blacksmith shop.

No. 1 Floating Dock.—No. 1 Floating Dock, the first built in Japan, was constructed at the Company's Nagasaki Works. It is securely moored inside the basin, and the advantages are: First, a ship can be docked at any state of the tide. Secondly, docking can be done more easily and in a shorter time than in a granite dock, as paint dries more quickly. Thirdly, the dock itself is practically on the same level as the workshops, so greater facility is afforded for conveyance of materials to the ship. The dock is very popular, and for the five years and a half ending Feb. 7th, 1911, 352 vessels were docked, of an aggregate tonnage of 838,889 tons.

The following are the particulars of the dock: —Type—sectional pontoon, designed by Messrs. Clark & Standfield, of London; length on blocks, 387 ft. 6½ in.; length over all, 412 ft. 6½ in.; breadth over pontoons, 85 ft.; breadth inside rollers, 60 ft.; maximum length of ship taken in, 460 ft.; maximum beam of ship taken in, 56 ft.; maximum draft of ship taken in, 22 ft.; lifting power, 7,000 tons; time occupied in pumping out, for lifting a ship of 7,000 tons gross, 2½ hours.

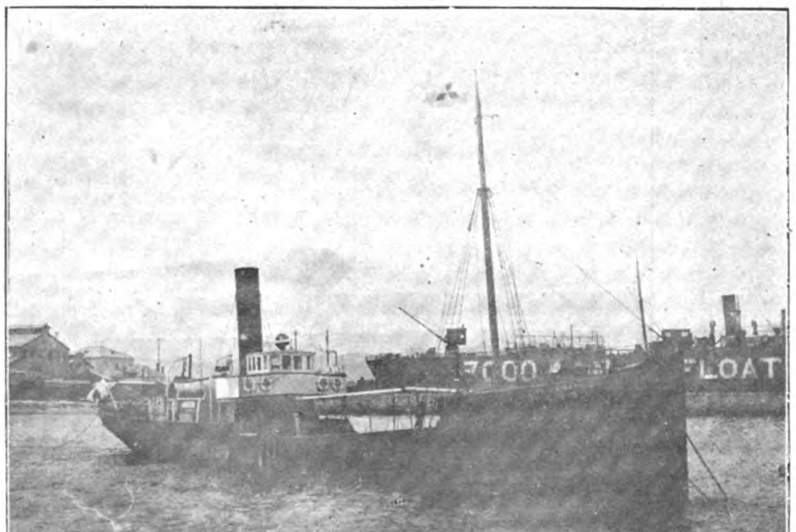
No. 2 Floating Dock.—No. 2 Dock was built at this shipyard, mostly from materials made at the Imperial Steel Works, in Kyushu, Japan. It is moored in the basin alongside the No. 1 Dock. During 2 years ending the 7th Dec., 1910, 92 vessels were docked, aggregating 306,638 tons gross.

The particulars of the dock are as follows:—Type—sectional pontoon, designed by Messrs Clark & Standfield, of London, same as for No. 1 Dock; length on blocks, 505 ft. 11-16 in.; length over all, 532 ft. 6 in.; breadth over pontoons, 100 ft. 11-16 in.; breadth inside rollers, 70 ft.; maximum length of ship taken in, 580 ft.; maximum beam of ship taken in, 66 ft.; maximum draft of ship taken in, 26 ft.; lifting power, 12,000 tons; time occupied in pumping out, for lifting a ship of 12,000 tons gross 4 hours.

Manufactures.—In addition to building and repairing vessels and their equipments, the works is adapted for making the following: land type boilers, engines, hoisting machines, dredgers, steel girders, steel buildings, pipes and pillars and various alloys. Electrical machinery with accessories is also manufactured and repaired. The works is one of the leading electrical factories in the country, its workmanship is of the highest class, and a bright future is promised for it.

Floating Sheerlegs and Salvage Plant.—Attached to the works is a floating sheerlegs, of 40 tons working load, built at the Nagasaki Works, and the salvage steamer *Arima Maru*, with powerful pumps of 2,000 tons capacity per hour, completes the equipment of the works.

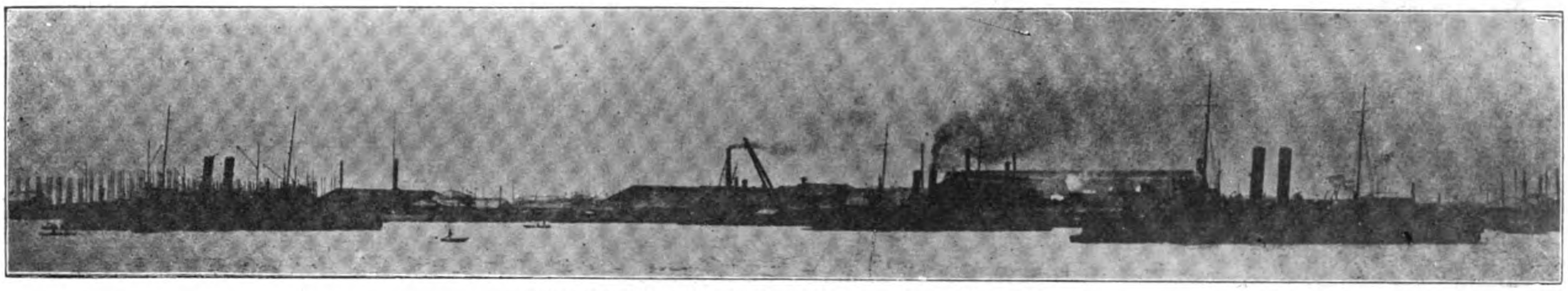
Pension and Savings Bank, Hospitals, etc.—In connection with these works are similar benevolent institutions for the welfare and encouragement of employees as at the works at Nagasaki. Gold medals of honor were awarded to the works at the Tokyo Industrial Exposition, 1907, and the Nagoya Industrial, 1910.



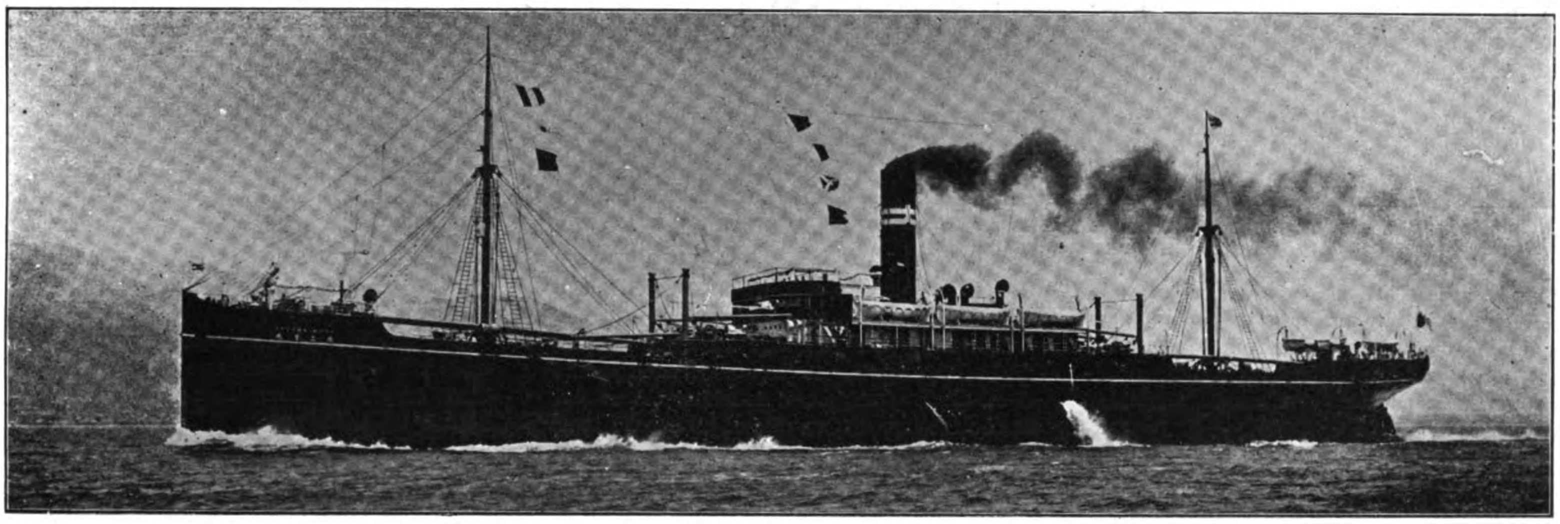
SALVAGE S. S. ARIMA MARU OF THE MITSU BISHI WORKS AT KOBE

THE KAWASAKI DOCKYARD COMPANY, LTD.

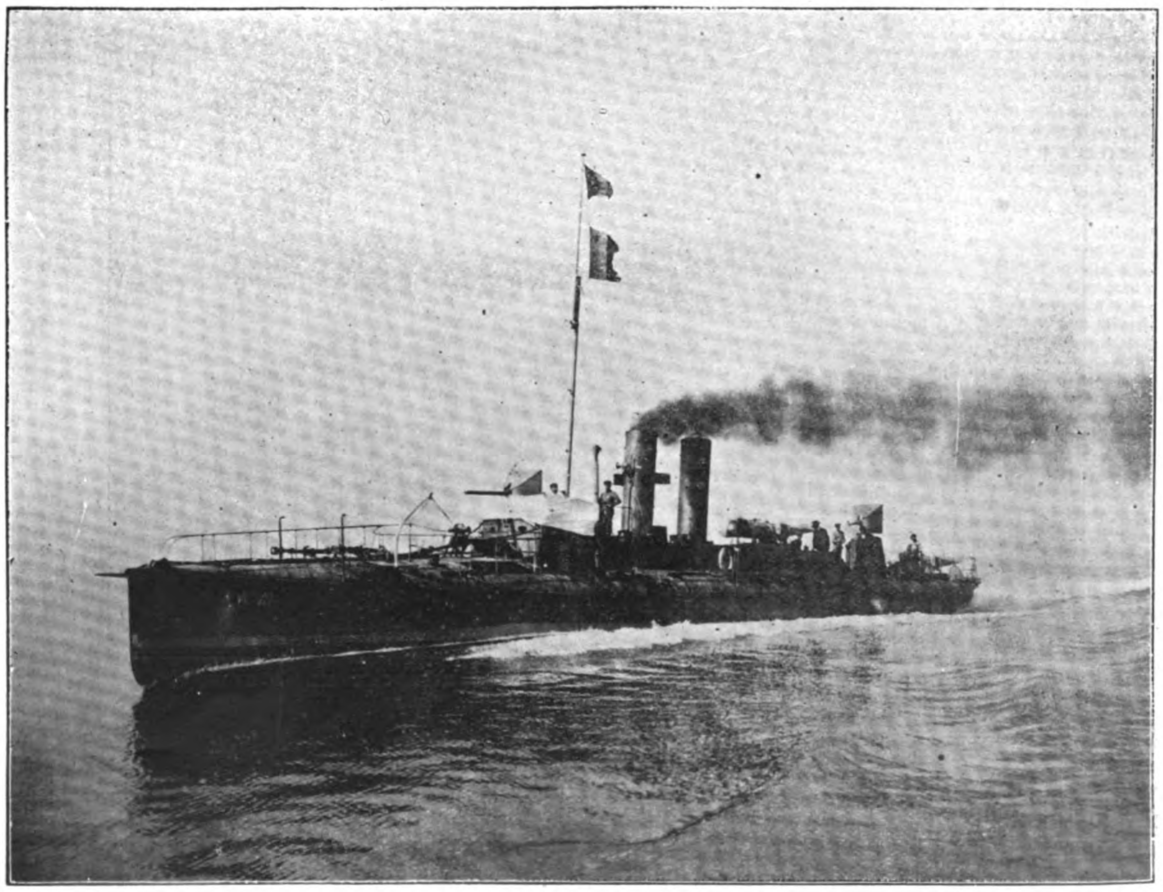
The Company was organized with a capital of two million yen in October, 1896, in Kobe. The origin of the Company, however, can be traced as far back as the early part of the 70's, and it can be said to be the pioneer of the Japanese shipbuilding industry. With Messrs. Kojiro Matsukata (President) and Yoshitaro Kawasaki (Vice President) at the head of the Board of Directors, the Company began to expand steadily year by year, and at present (December, 1910) it occupies more than 104 acres of ground in all, and 206 buildings for offices, workshops and godowns stand thereon The ground area actually covered by the main works of the company in Kawasaki Cho, Kobe, is 47 acres, which are occupied by 198 buildings of various sizes. The area of the Hiogo Branch is 25.6 acres, that of the Shanghai Branch 13 acres, that of the ice works in Hiroshima 1.3 acres and that of the Dairen Branch 13.1 acres, while there are 4.4 acres besides the foregoing occupied by the residences of the company's officers.



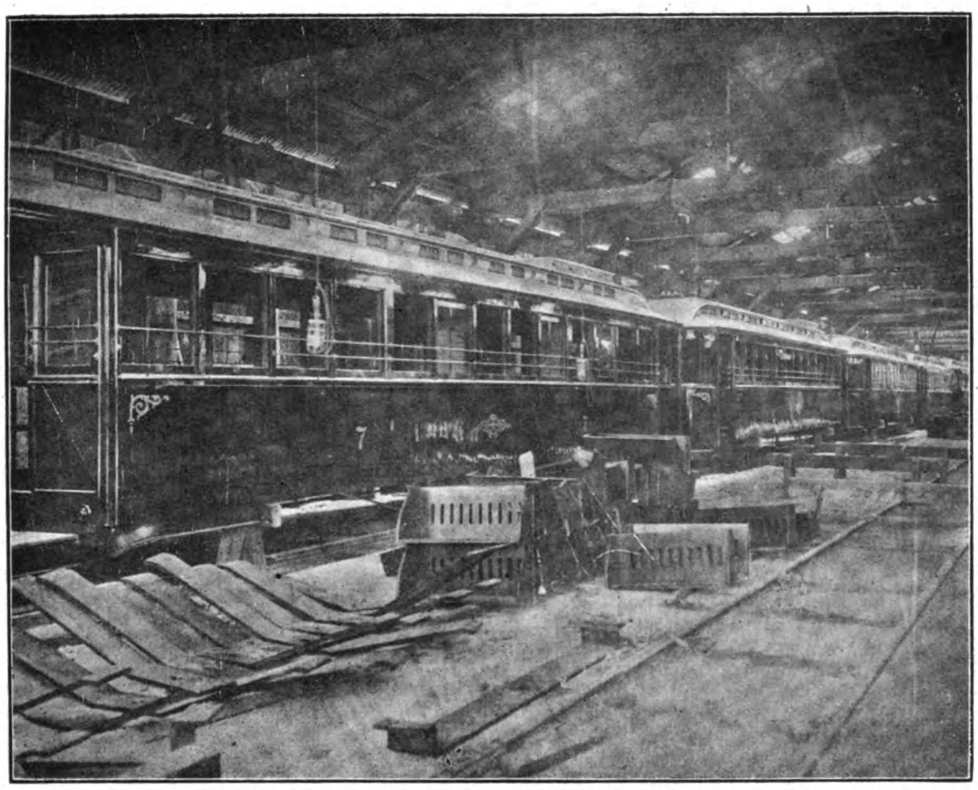
FRONTAGE OF THE KAWASAKI DOCKYARD AT KOBE



S. S. ' TACOMA MARU," OF THE OSAKA SHOSEN KAISHA BUILT AND ENGINED BY THE KAWASAKI DOCKYARD LTD.

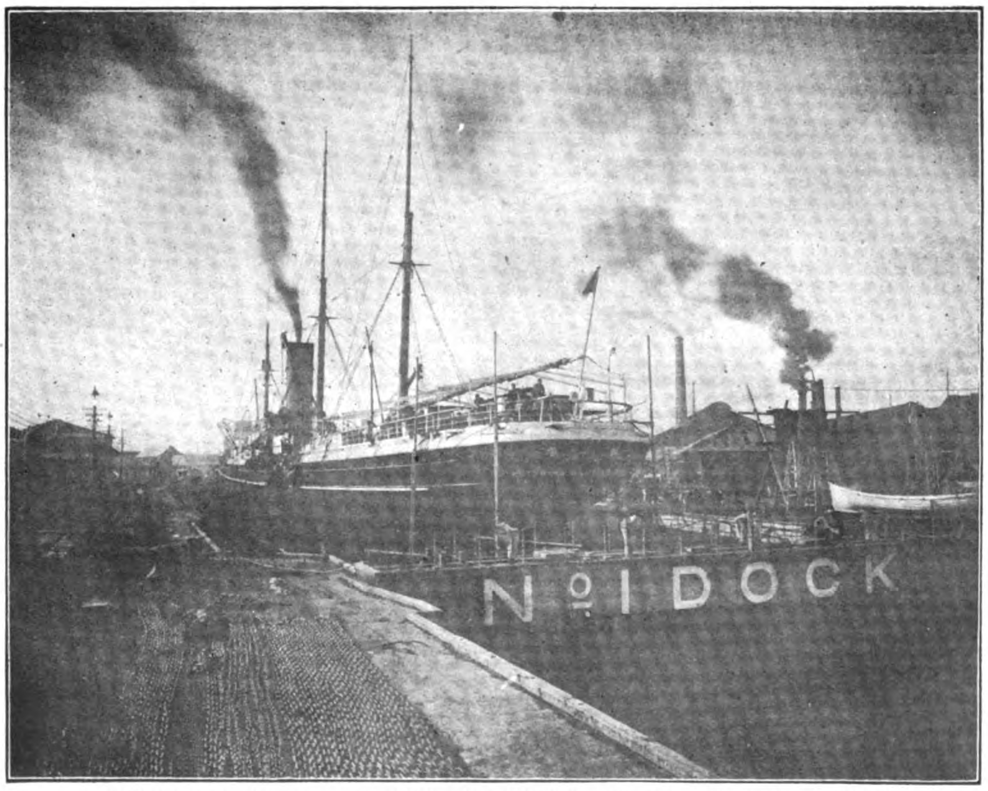


ONE OF THREE TORPEDO BOATS BUILT FOR THE ROYAL SIAMESE NAVY BY THE KAWASAKI DOCKYARD LTD.



CARRIAGES FOR THE HIOGO ELECTRIC TRAMWAY CO., BUILT BY THE KAWASAKI DOCKYARD, LTD.

The Company had to increase its capital several times, and it amounted to ten million yen, divided in 200,000 shares, in November, 1906. The total paid-up capital at present is 6,400,000 yen and that of the reserve funds 1,510,000 yen



KOTOHIRA MARU IN NO. I DOCK OF THE KAWASAKI DOCKYARD AT KOBE

At the present moment the Company has its offices as mentioned below:

Main Offices and Works, Higashi Kawasaki-cho; Kobe; Hiogo Branch, Higashi Shiriike, Hiogo, Kobe; Dairen Branch, Hama-cho, Dairen (Dalny); Ice Works, Hiroshima near Kobe; Shanghai Branch (re-opening of which is under consideration), Pootung, Shanghai.

Ordinarilly the company has been carrying the business relating to the building and repairs of all kinds of ships and machinery, iron and bronze castings and repairs of all descriptions; but it now undertakes the following works:

Construction, manufacture and repairs of battleships, cruisers, torpedo-boats, destroyers, submarine boats, merchant steamships, dredgers, trawlers and vessels of any description; steel, iron and bronze castings, boilers and all kinds of machinery, tools, locomotives and rolling stock, rails, etc., for railways and electric tramways, bridge girders and spans, arms, weapons, power machinery and industrial and mining machinery of every description, and gas and water pipes. It also undertakes salvage operations and towing, ice manufacture and all kinds of building and construction works.

The Hiogo Branch was inaugurated in July, 1907, and the steel casting, sawyers' works, and the construction of railway locomotives, electric tram carriages, bridges and girders of all descriptions have been carried on there.

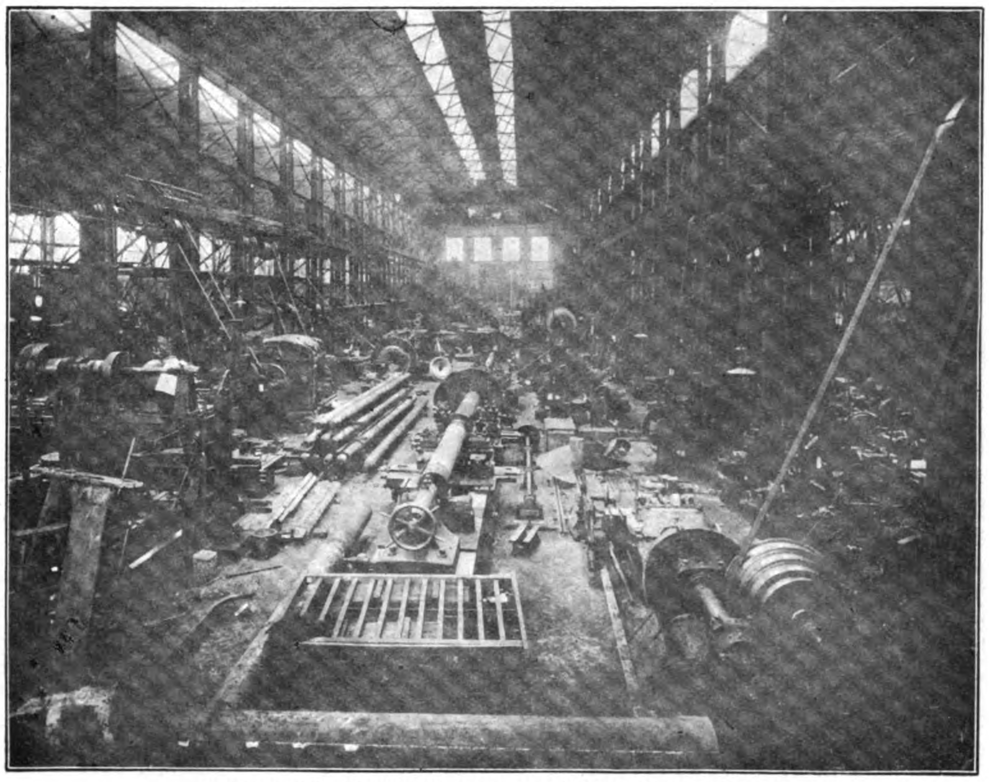
The Dairen Branch was opened in July, 1908. There is one graving dock of 381′ 0″ length, capable of accommodating a vessel up to 3,000 tons. Repairs to vessels trading to and from or in North China coasts are undertaken. The works have already received a good deal of orders for machinery for factories and other land purposes and are well patronized by the general public.

Patent Rights.—The company having purchased the following patent right, now possesses the sole right to make and sell them in Japanese Empire, and in China and Siam in some cases:

Curtis Marine Steam Turbine, Cantilever Framed Steamship, Schmidt's Superheater for Marine & Locomotive Uses, General Electric Co.'s Electric Locomotive equipment and fittings, Weir's Uniflux Condenser, Miyabara's Water Tube Boiler, Aetonia Process of Casting, Monel Metal (Agency).

Dry Docks and Slipways.—The Company owns two dry docks and two patent slipways, their respective dimensions being as given below:

No. 1 Graving Dock (Kobe).—Extreme length, 425′ 0″; length on blocks, 377′ 0″; width of entrance on top, 63′ 6″; width of entrance at bottom, 51′ 7″; water on blocks at spring tide 24′ 6″.



CENTER BAY MACHINE SHOP, KAWASAKI DOCYARD LTD.

No. 2 Graving Dock (Dairen).—Length, 381′ 1″; width of entrance on top, 49′ 2″; width of entrance at bottom, 48′ 0″; depth over sill, 23′ 3″.

No. 3 Patent Slipway.—Length, 280′ 0″.

No. 4 Patent Slipway.—Length, 180′ 0″.

Shipbuilding Stocks.—The shipbuilding stocks at present are as follows:

No. 1 for vessels up to 4,000 tons (gross and displacement).

No. 2 for vessels up to 6,000 tons (gross and displacement).

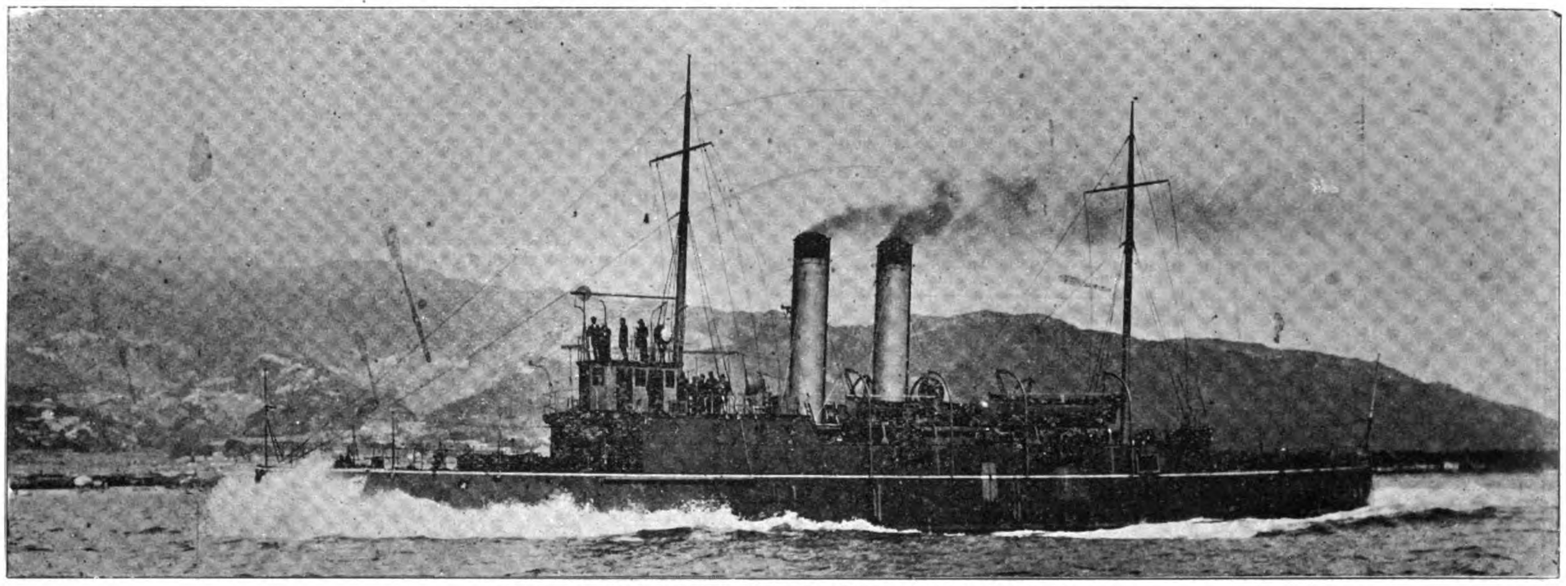
No. 3 for vessels up to 20,000 tons (gross and displacement).

No. 4 for vessels up to 30,000 tons (gross and displacement). To be fitted with gantry crane shortly.

No. 5 for vessels up to 3,000 tons (gross and displacement).

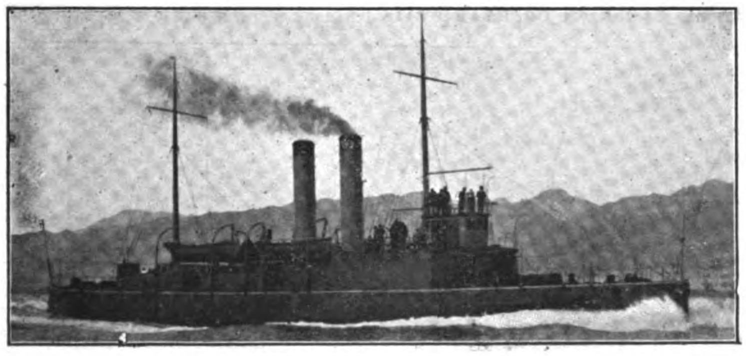
The stocks are equipped with nine 3-ton and seven 8-ton derrick posts with electric winches. Besides the foregoing stocks several temporary stocks for vessels of smaller descriptions are available.

Transport Service.—There are 4 miles of railway tracks in the Main Works alone, to facilitate the conveyance of materials, and three locomotive cranes of 3-5 ton lifting capacity, besides two portable hand cranes, are employed on the tracks. The railway in the Hiogo Branch is connected with the State Railway at Hiogo Station.

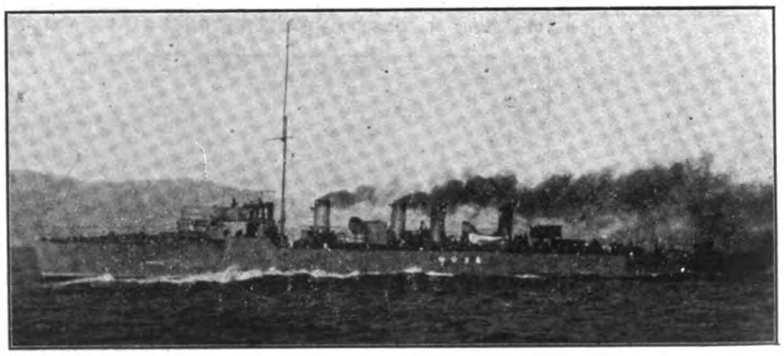


H. I. C. M.'S RIVER GUNBOAT "KIANG-YUAN"

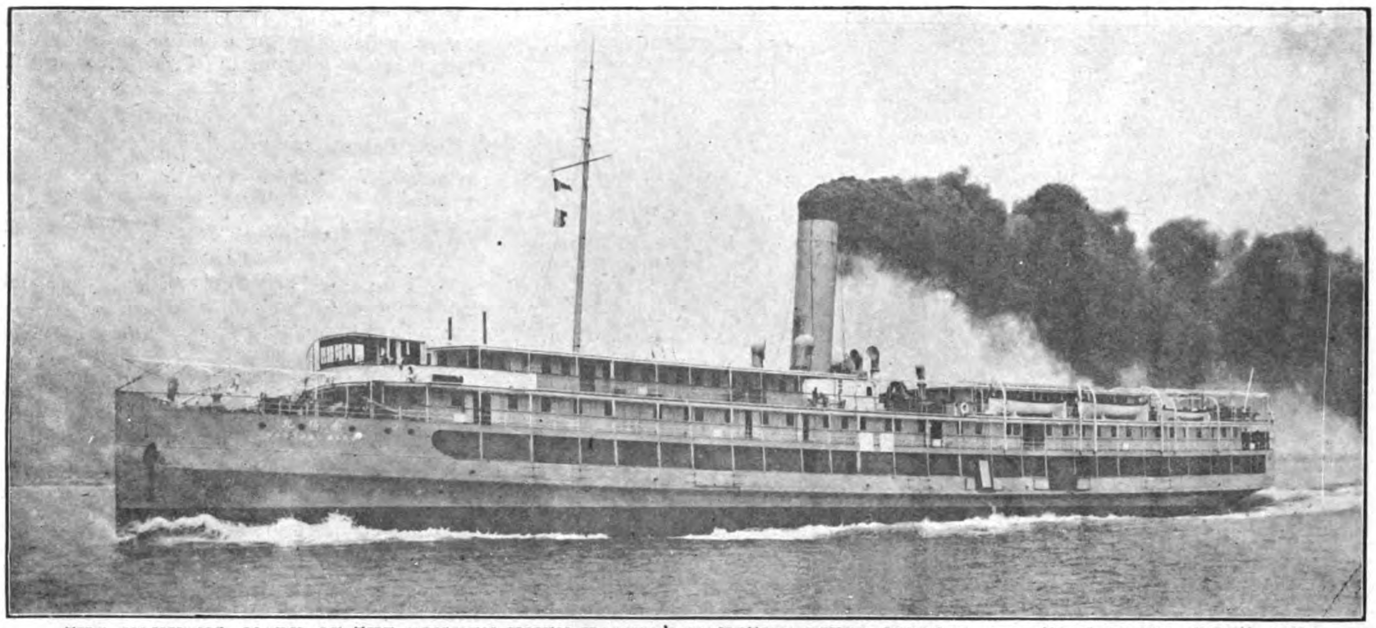
Built at Kobe, 1905, by the Kawasaki Dockyard Company for the Viceroy of the Liang Kiang at Nanking. Displacement: 565 Tons; I. H. P., 487; Speed 14.8 on trial.—One 4.7 quick firing gun, one 3-in. and 3 3-pounders; 4 maxims.



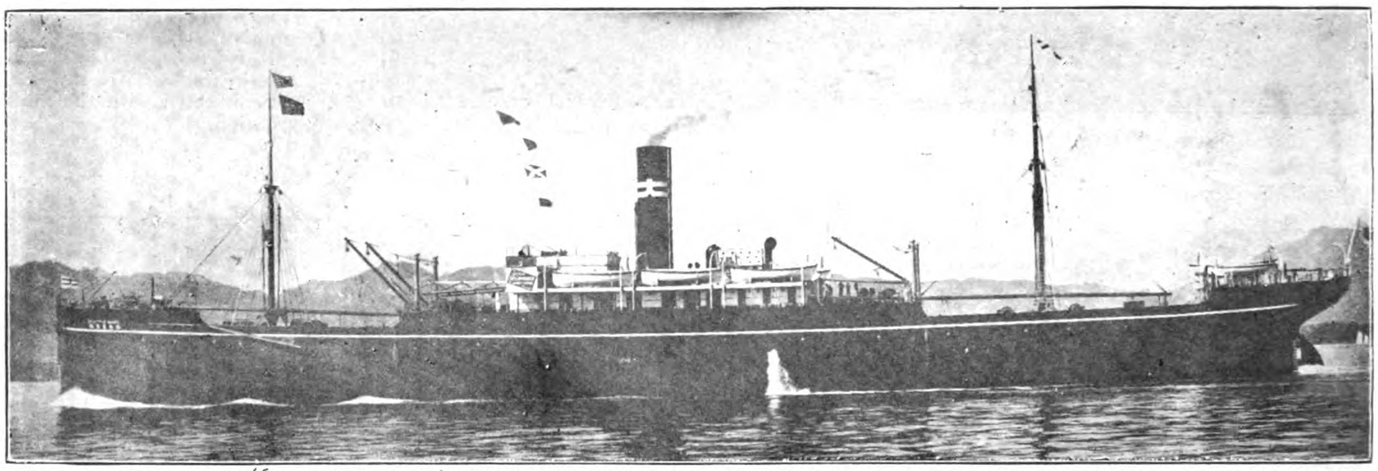
TRIAL TRIP OF H. I. J. M'S TORPEDO-BOAT DESTROYER "ASAKAZE," 1905. SPEED 29.67 KNOTS. ONE OF FIVE SISTER SHIPS BUILT AND ENGINED BY THE KAWASAKI DOCKYARD COMPANY, LTD.



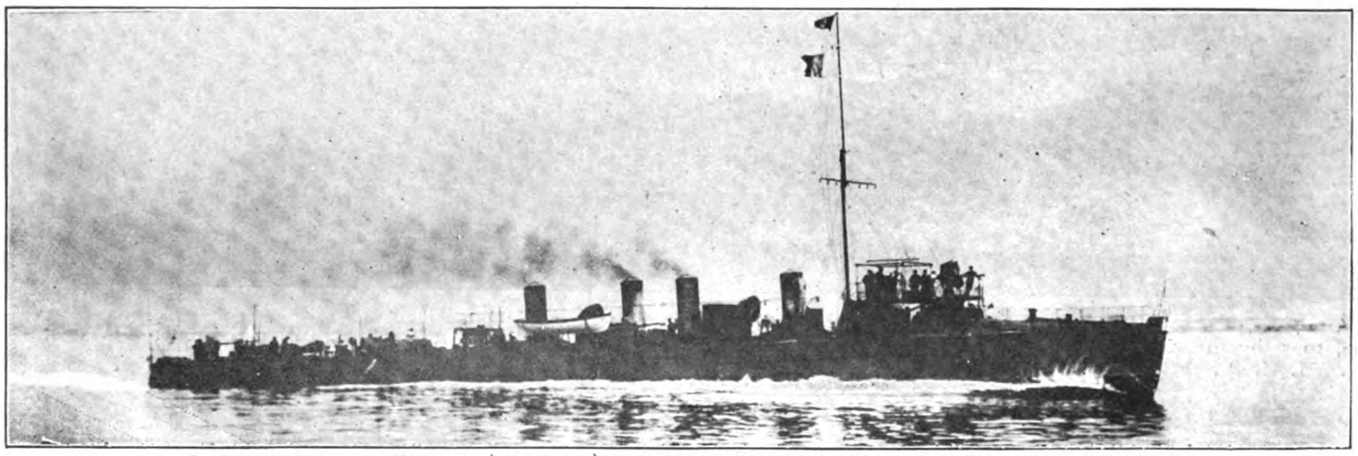
TRIAL TRIP OF H. I. J. M'S TORPEDO-BOAT DESTROYER "ASAKAZE," 1905. SPEED 29.67 KNOTS. ONE OF FIVE SISTER SHIPS BUILT AND ENGINED BY THE KAWASAKI DOCKYARD COMPANY, LTD.



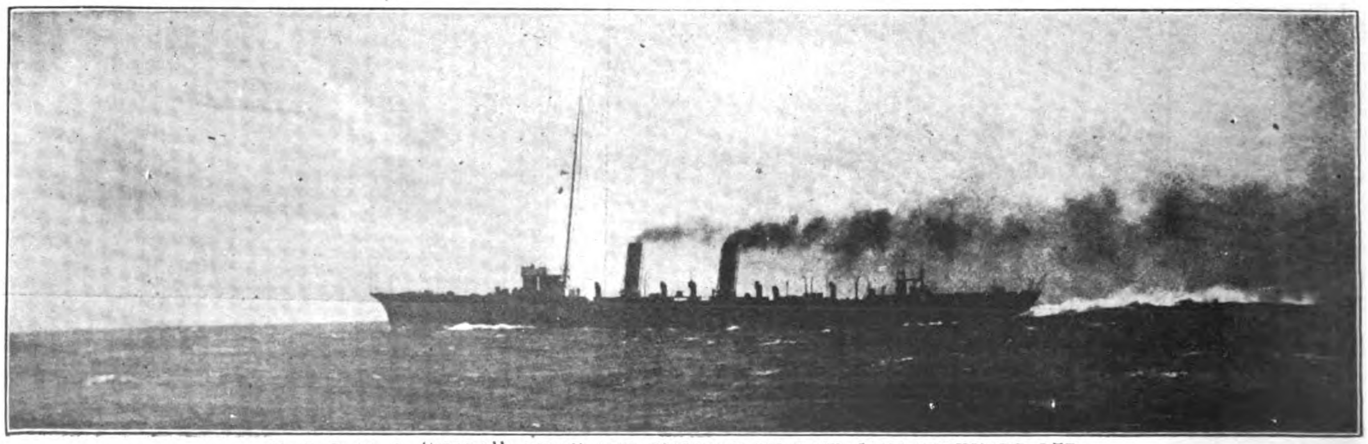
THE NANYANG MARU OF THE NISSHEN KISEN KAISHA'S YANGTSZE RIVER SERVICE, 3500 TONS GROSS: BUILT AND ENGINED BY KAWASAKI DOCKYARD LTD.



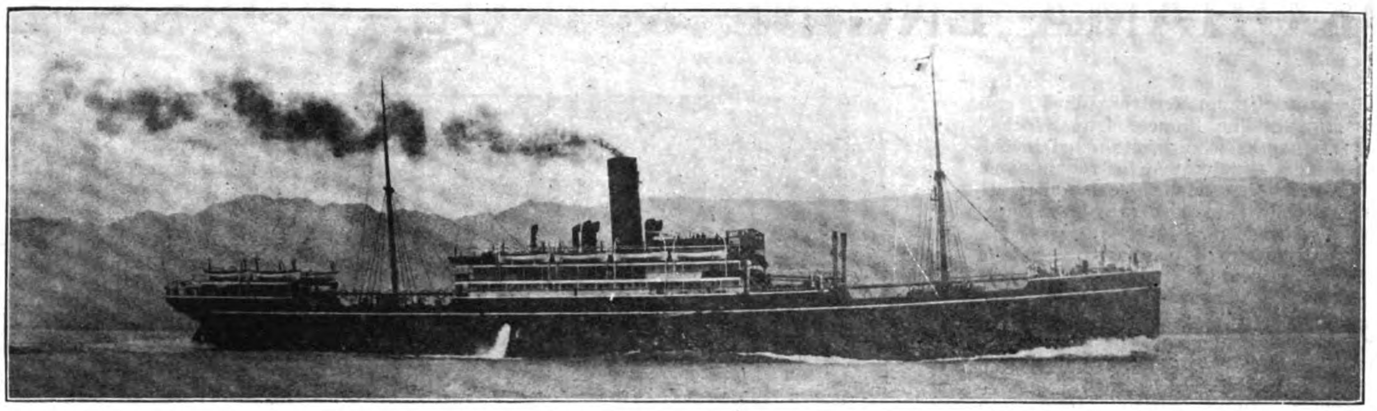
THE SEATTLE MARU (6000 TONS GROSS) BUILT AND ENGINED BY KAWASAKI DOCKYARD LD. FOR THE OSAKA SHOSEN KAISHA



R. SIAMESE M. DESTROYER (375 TONS) BUILT AND ENGINED BY KAWASAKI DOCKYARD LTD.



H. I. J. M. S. "YODO": BUILT AND ENGINED BY KAWASAKI DOCKYARD LTD.



THE NIPPON YUSEN KAISHA S. S. MISHIMA MARU, 8500 TONS GROSS, BUILT AND ENGINED BY THE KAWASAKI DOCKYARD LD.

On the water there are two floating cranes, the capacity of one, which is the largest of the kind in the Far East, being 200 tons and that of the other 20 tons. There are also two wharf cranes and a sheer legs, which is capable of lifting 60 tons.

Work-Shops.—The work-shops, both in the hull and engine departments, are supplied in every respect with the most up-to-date machinery. The number of machines in use at the present time has reached the surprising total of 1,330.

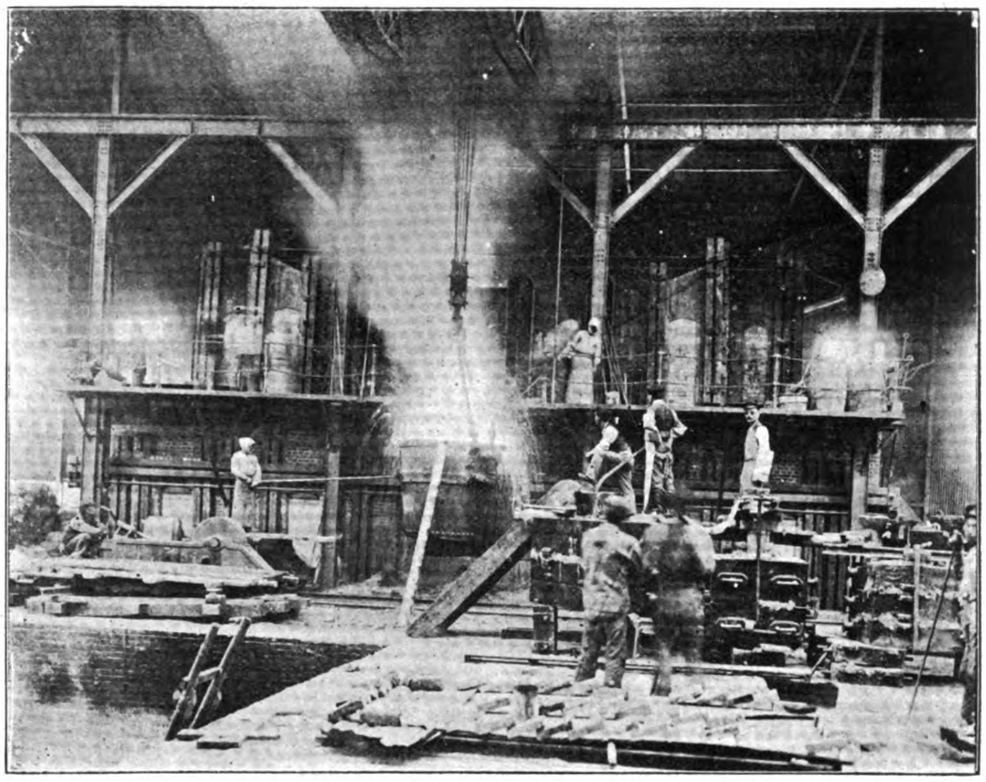
The largest diameter that can be turned on a lathe is 20 feet. The largest vertical planer can plane 16 feet horizontal and 13 feet vertical surface and the longest horizontal planer 24 feet by 8 feet by 6 feet. The largest shaft that can be turned is 80 feet long.

By means of electrically driven portable machine tools, every different part of a piece up to 30 feet by 30 feet can be worked at one time. The maximum over-head travelling crane capacity is 125 tons. The largest steel ingot, which can be cast in one charge is 15 tons.

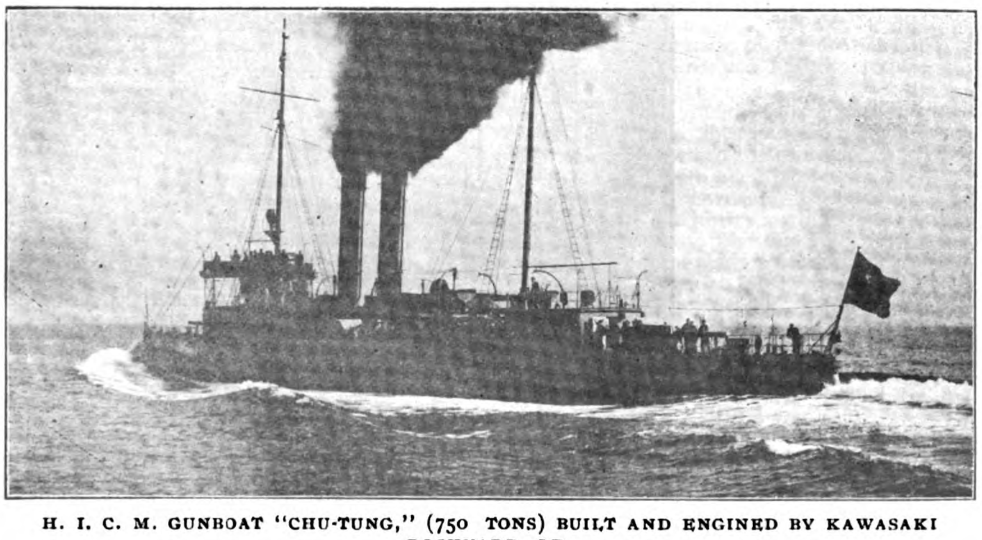
Company's Privilege.—It was the Company's exclusive good fortune to receive orders for warships and machinery from foreign Governments in addition to orders from the Imperial Japanese Government. This fact alone suffices to encourage the Company to do its best in turning out the very best articles and so maintaining the honor which it has so far monopolized, thereby expressing its gratitude for the patronage bestowed on it. Several officers of the Company were decorated by the Japanese Government and foreign Governments in recognition of valuable services rendered.

Principal Output and Works in Hand.—The total number of vessels of all descriptions built and engined by the Company up to the present is 342 and that of engines and boilers, etc., is 2,381, besides 12 railway locomotives and 114 electric tram and railway carriages and a large quantity of bridge girders, gas and water pipes, etc.

The Company is building at present moment one cruiser, one gun-boat, one destroyer and one submarine boat; of these the cruiser and destroyer are to be equipped with turbine engines; two steamships of 6,200 tons and 3,000 tons respectively; six steam trawlers and two sets of turbine engines for a battleship and a cruiser, besides a large number of smaller vessels and various descriptions of machinery and railway rolling stock and other purposes.



MAIN STEEL FURNACE IN THE HIOGO BRANCH OF THE KAWASAKI DOCKYARD



H. I. C. M. GUNBOAT "CHU-TUNG," (750 TONS) BUILT AND ENGINED BY KAWASAKI DOCKYARD, LD.

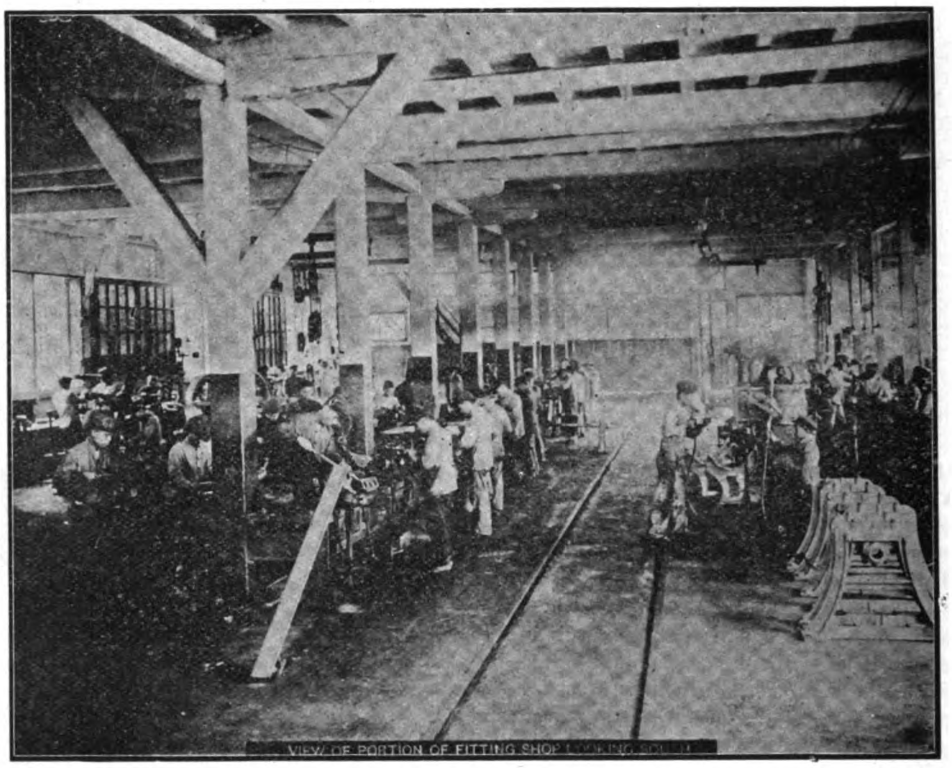
YOKOHAMA ENGINE & IRON WORKS, LTD.

The Yokohama Engine & Iron Works can justly be termed "The Pioneer Iron Works" of Japan. The works were first started in the year 1870 to meet the demand for repair work in ships and steamers, and local work offering. Yokohama was only a small place in those days, and the number and size of ships arriving in the port was very small compared with the present day. Moreover there were no railways or factories, so that their scope was limited. However, as the port grew in importance the local iron works, always kept pace with the times. In 1887 the business was purchased from Messrs. Whitfield & Dowson and Mr. Kildoyle, the proprietors at that time, converted into a limited liability company, and registered with its present title under the Hongkong Ordinance with a capital of Yen 130,000.

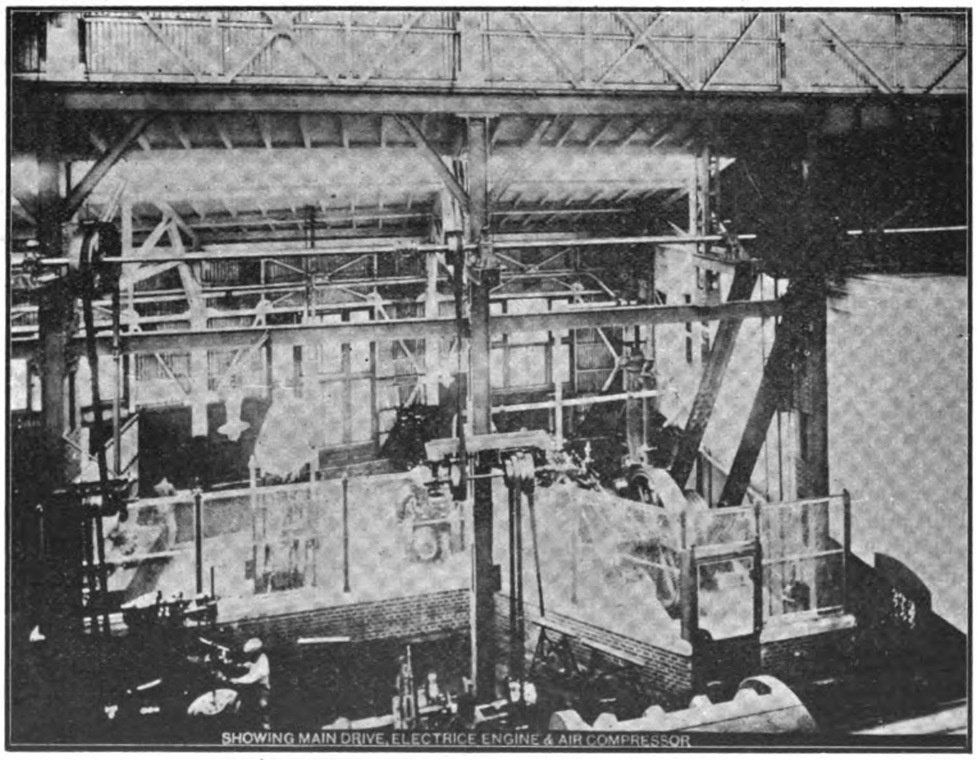
For many years after this the company enjoyed unique prosperity, earning handsome dividends for its shareholders, and gaining for itself a reputation for doing high class work in a prompt and most efficient manner.

In 1906 the company bought out a rival concern, the Peterson Engineering Company, which had come into existence in the meantime, the capital being increased to Yen 500,000 at which figure it now stands; the details being as follows:

Authorized capital, Yen 500,000; paid up capital, yen 390,000; reserve fund, yen 75,000; loans, yen 120,000.



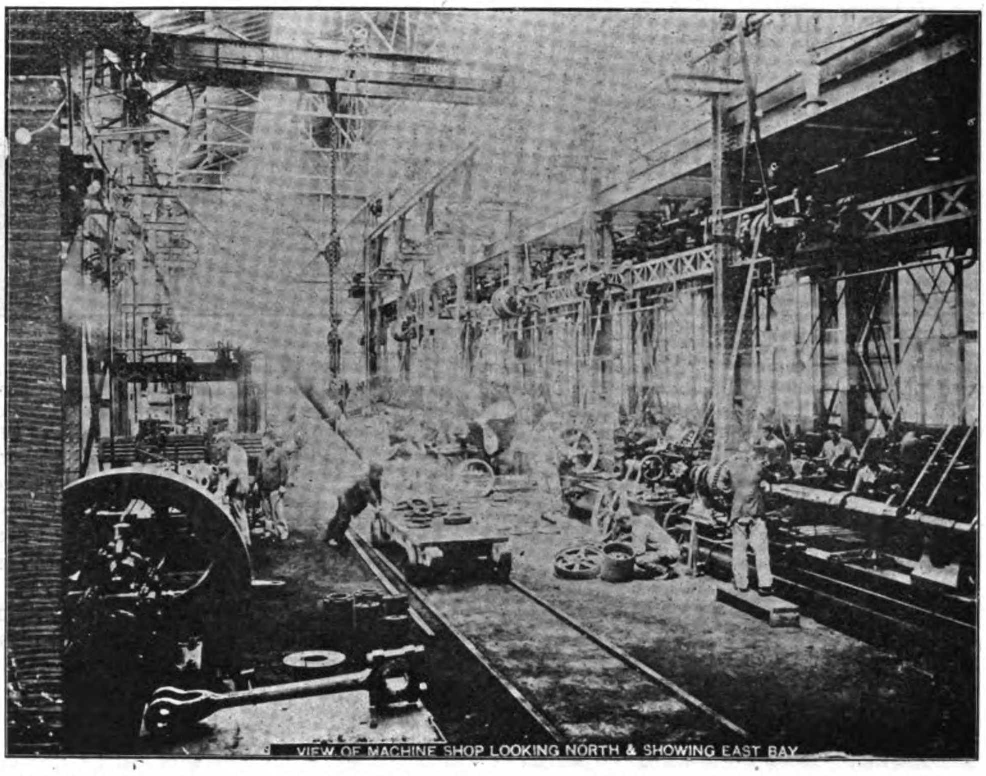
VIEW OF PORTION OF FITTING SHOP, LOOKING SOUTH, YOKOHAMA ENGINE & IRON WORKS



YOKOHAMA ENGINE & IRON WORKS

It is expected that the balance of the unpaid capital (Yen 110,000) will shortly be offered solely to the present shareholders. It is entirely due to the conservative policy of the company in the past, in writing off liberally each year for depreciation, that the capital for such large and efficient works is as low as it stands at present. It is estimated that it would cost double the company's present capital to duplicate the works. At the present moment the total number of men employed is about 500, and it is satisfactory to note that the relations between the management and the men are very cordial, labor troubles being non-existent.

Recently an import department was organized, which, working in conjunction with the department devoted to manufacturing for the local requirements, enables the first to handle extensive contracts, including plant which still has to be manufactured abroad. The firm is agent for several important English manufacturers who appreciate the advantages of having their interests looked after by practical engineers, with extensive work shops at their back, to attend to the small difficulties which of necessity arise when a contract is being executed so far away from the point of manufacture.



VIEW OF MACHINE SHOP LOOKING NORTH AND SHOWING EAST BAY, YOKOHAMA ENGINE AND IRON WORKS

The situation of the works in the Foreign Settlement, with its extensive water frontage, places the company in a most advantageous position to handle the shipping work of the port, to which for some time its attention was almost entirely devoted. In later years, however, manufacturing has been extensively undertaken and among its manufactures may be mentioned steam engines, boilers, pumps, iron and steel chimneys, air compressors, small steamers and launches, railway appliances, railway freight cars, railway tank cars and a number of other lines too numerous to mention.

It may here be remarked that with its reputation for high quality work the company has enjoyed the patronage and confidence of foreign navies, notably that of the United States, for which a large amount of repair and manufacturing work has been executed, including gun mountings and new gun sights. The Rising Sun Petroleum Company placed contracts for large amounts, including 80 tank cars for use on the railway, and a quantity of iron buildings.

The Yokohama Engine & Iron Works, Ltd., are also approved manufacturers to the Japanese Navy and are frequently favored with contracts to manufacture various classes of machinery to Admiralty specifications. The Japanese naval inspectors have the reputation of being the most critical of any of the world's great naval powers and the fact that the products of the company are very favorably considered by them, is a high tribute to the quality of their productions.

Almost without exception have the manufactures of the company given the greatest satisfaction to buyers, as the rule of the company is to undertake high class work and not to take work at low competitive prices, which preclude the possibility of the high standard of work for which the company has earned such a just reputation.

The company in accordance with its avowed principle of keeping in line with the improvements in other parts of the world, not only has its management and engineering staff of Europeans but also employs European foremen for its various shops, who are recruited from time to time from the ranks of those who have gained experience in similar positions in the shops of the leading manufactures in the other side of the world. In this respect the company is unique in Japan; but the directors being firm believers in the axiom that "a satisfied customer is the best advertisement," act up to their opinion that this policy although an expensive one brings its reward in the long run.

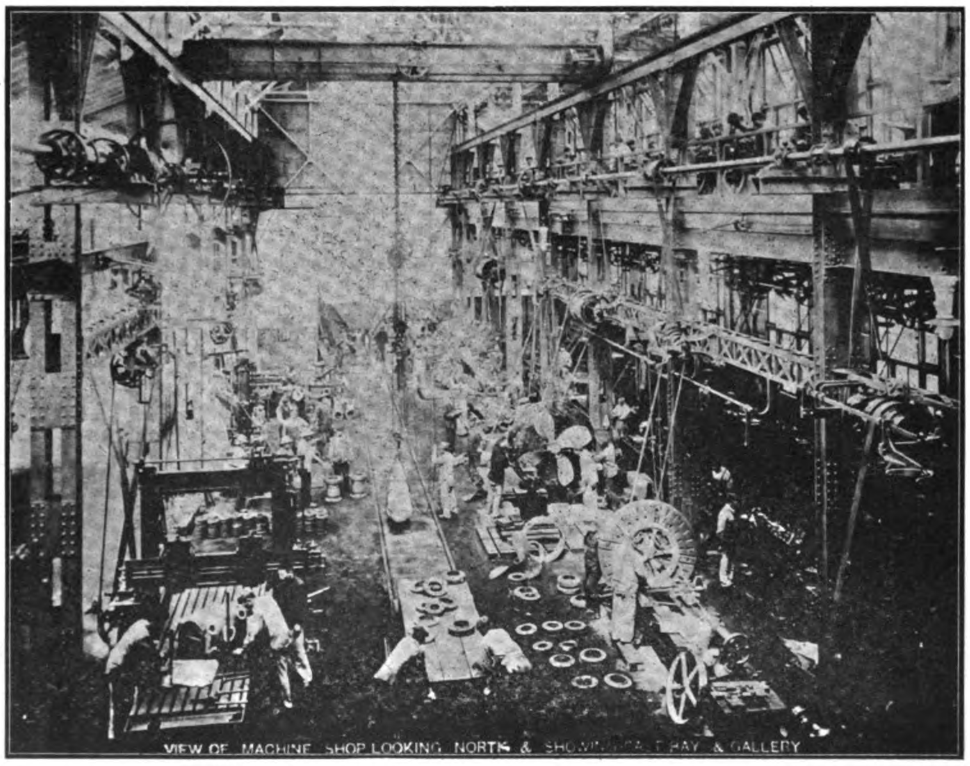
The present works cover nearly 3 acres of ground and the plant has been kept thoroughly up-to-date. The recent extensions have been carried out to the designs of Mr. W. K. Tresizo, the works manager, and comprise a new machine shop 270 feet long by 70 feet wide, with a 15-ton travelling crane. Along the sides of this shop are arranged the numerous large lathes, drilling, planing, shaping, screw cutting and milling machines, while in the gallery are placed all the various smaller machines which go to making a complete plant. The foundry is adapted for castings up to 10 tons having 3 cupolas for iron and 5 furnaces for bronze castings, while latest types of cranes are used for handling heavy weights.

The boiler shops are equipped with modern machines, most of which are direct engine driven, the machines consisting of heavy plate bending rolls, multiple punching machines, punching and shearing machines, cold cutting machine saw, etc., etc., enabling the company to do the heaviest class of work. A powerful air compressing plant has been installed for use with pneumatic rivetting, chipping and caulking tools, the rivet forges being also kept going by compressed air.

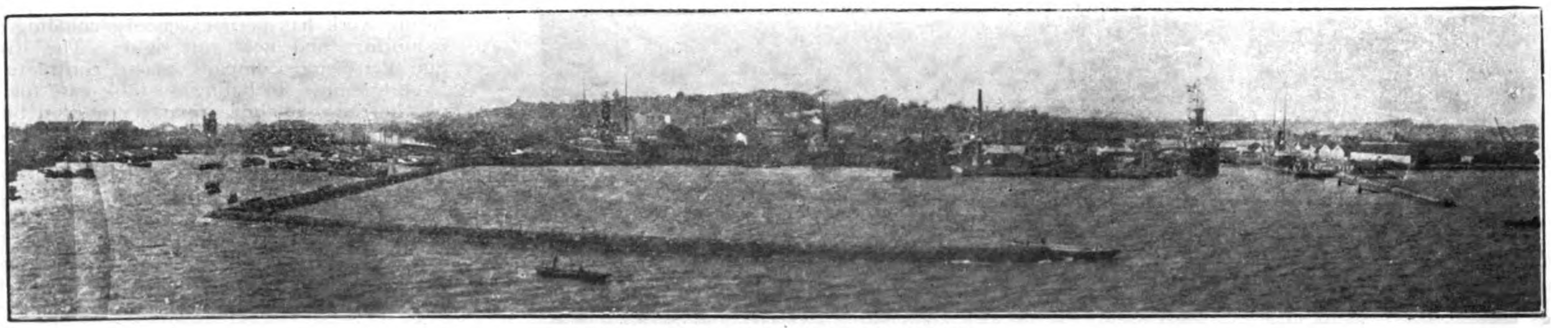
The power plant consists of two 190 H. P. Babcock & Wilcox boilers, driving a large compound horizontal engine besides small engines, and these, with the electric lighting engine and compressor plant, are situated in the most convenient position to produce the utmost efficiency.

On the works grounds conveniently located between the plating shed and the machine shop is a small slip on which the company can repair or build vessels up to about 80 feet in length.

Realizing that increase of customs duties on manufactured machinery, which are to be enforced from July 17th of this year, must result in a large amount of plant which is now imported; being manufactured in Japan, they have made preparations to undertake the manufacture under royalty of machines and appliances on behalf of foreign manufacturers and inventors. Several firms have already concluded arrangements with the Yokohama Engine & Iron Works Ltd., with the intention of maintaining the trade they have previously enjoyed. It is confidently expected that many others will follow suit and that in this direction there will shortly be developed a large and increasing field for the company's operations.



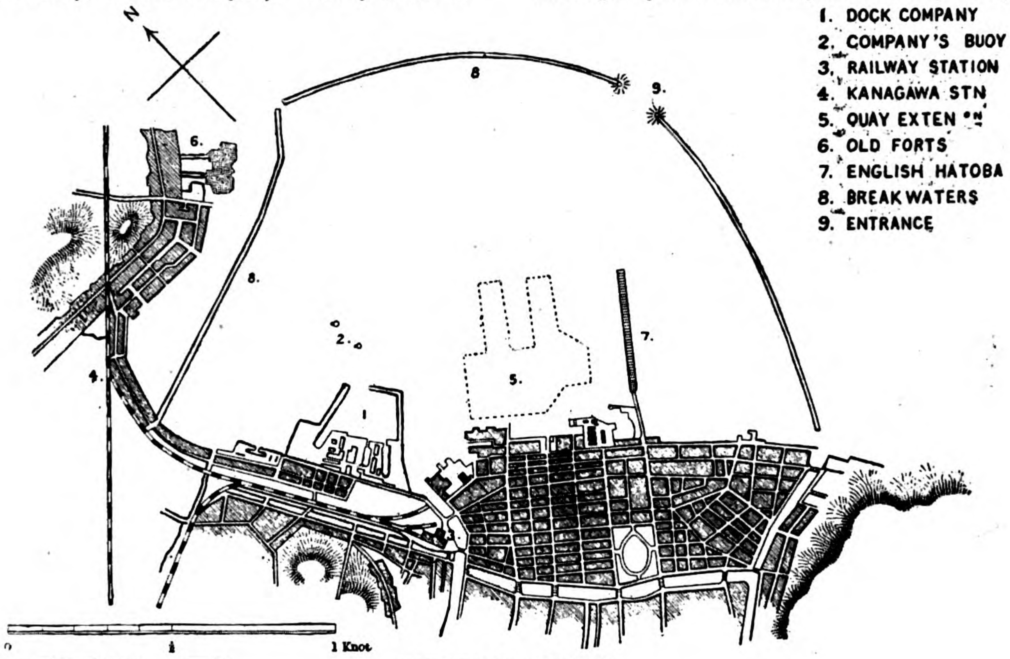
VIEW OF MACHINE SHOP LOOKING NORTH AND SHOWING EAST BAY, YOKOHAMA ENGINE AND IRON WORKS



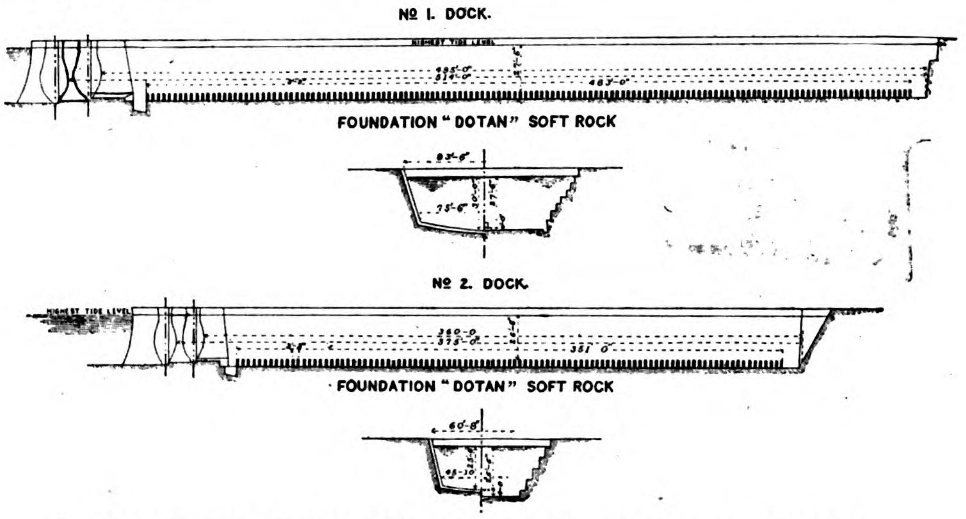
GENERAL VEW OF YOKOHAMA DOCKS

THE YOKOHAMA DOCK CO., LTD.

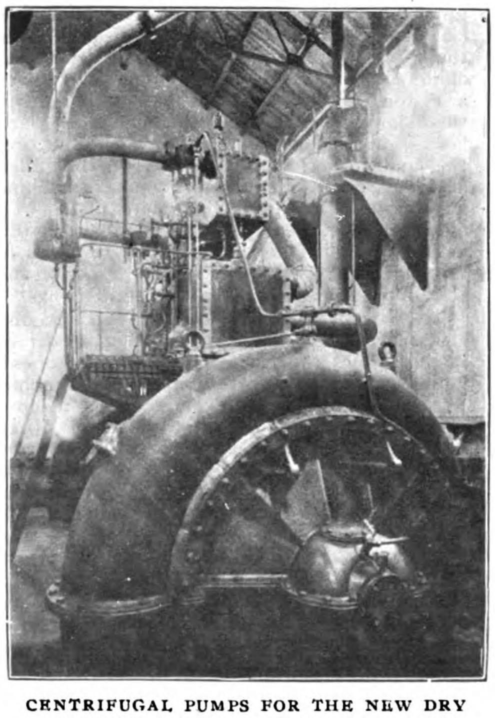
The necessity for dry docking facilities in the port of Yokohama began to be felt about the year 1887 on account of the great increase in the shipping business and the increasing number of vessels flying the Japanese flag and owned in Yokohama and Tokio. Previous to this date the Naval docks at Yokosuka, about eight miles from Yokohama, were available for merchant vessels, more or less by the courtesy of the Navy department. About the year 1887 a plan was formulated by Colonel Palmer, at the request of many influential gentlemen in Yokohama and Tokio and after much discussion and the lapse of several years, a company was formed in 1894 to take over the repair works of the Nippon Yusen Kaisha (Japan Steamship Company) and to build two dry docks. The position for the docks was carefully considered and an excellent site was obtained on very advantageous terms from the Central Government on the understanding that the company undertook to reclaim about 32 acres of the foreshore near the Yokohama railway station and build two dry docks. The capital of the company was fixed at three million yen and a sum of Yen 1,980,000 was called up to build the docks and workshops of the company. The position of the docks was well chosen within the harbor with a solid, though easily worked, rock foundation about 18 to 20 feet below high water level, making it quite unnecessary to have any heavy



YOKOHAMA HARBOR

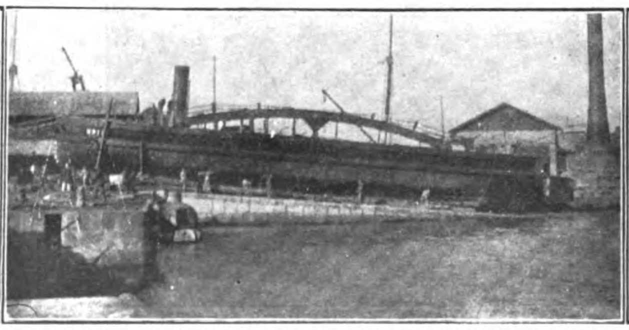


PLAN SHOWING CONSTRUCTION OF YOKOHAMA DOCK COMPANY'S DOCKS

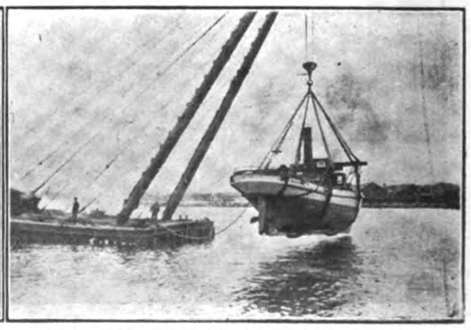


CENTRIFUGAL PUMPS FOR THE NEW DRY DOCK OF THE YOKOHAMA DOCK CO. LTD.

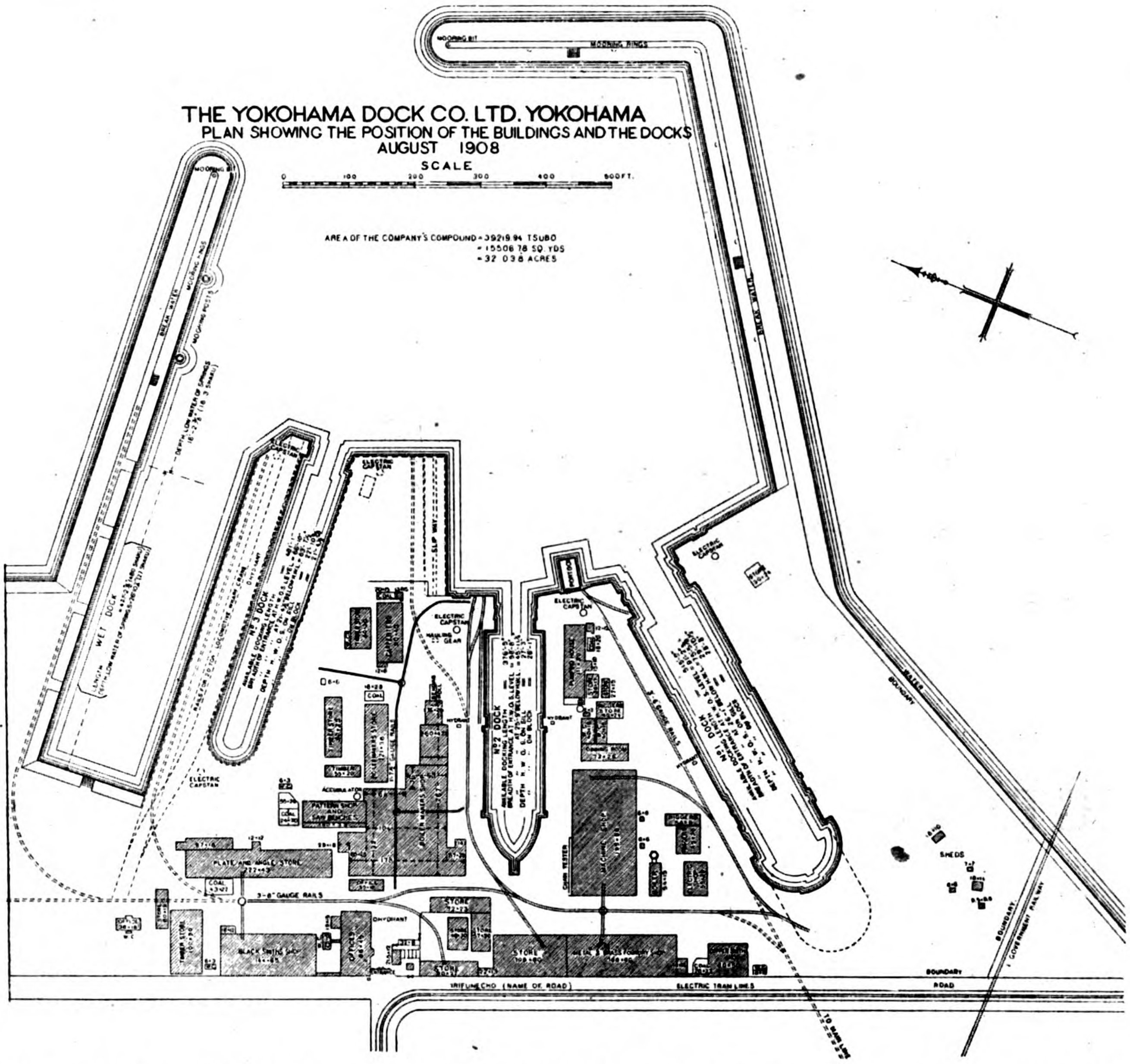
60-TON MOTOR BARGE



YOKOHAMA DOCK COMPANY. LAUNCH OF A 125-TON BARGE ON NEW SLIPWAY

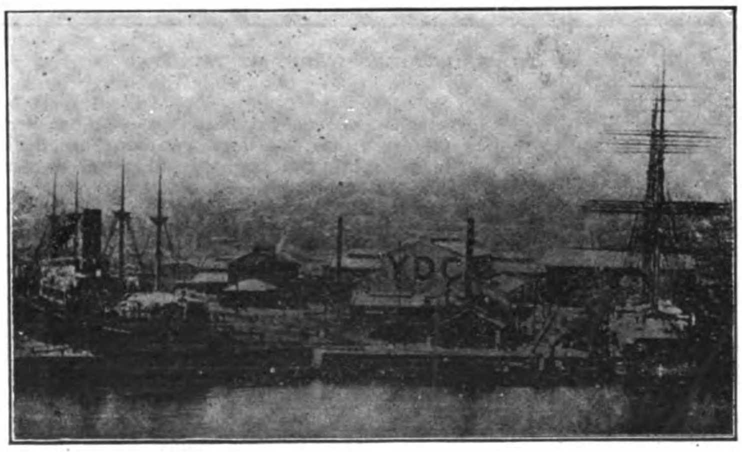


SHEERLEGS LIFTING A 45-TON STEAM LAUNCH

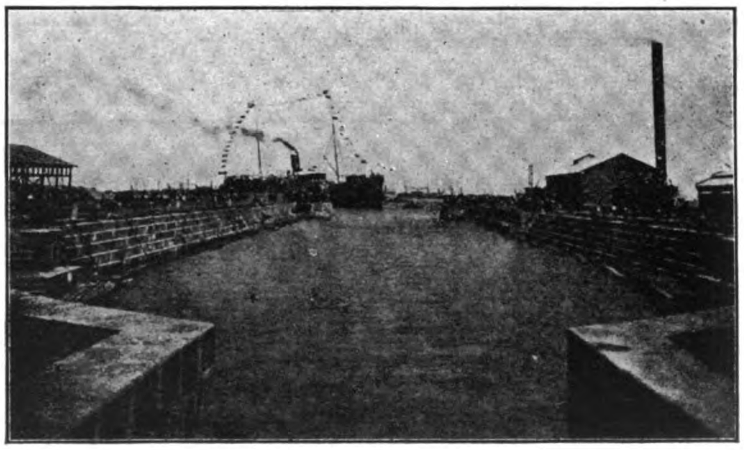


foundations. The two docks were built of hard granite obtained from the neighboring quarries of Idzu. Steel caissons were built for the entrances which can be worked at any state of the tide. The first dock was opened for business by the then President of the company, Baron Kawada, in April, 1897. It has a length, of 376 feet, a breadth at the entrance of 51 feet and a depth on the keel blocks of 26 feet at high water. The second dock was completed and opened in April 1899. It has a length of 584 feet, a breadth of 80 feet at the entrance, and a depth over the keel blocks of 27 feet at high water. The water is pumped out of both docks by a duplicate set of centrifugal pumps made by W. H. Allen Son & Co. of Bedford.

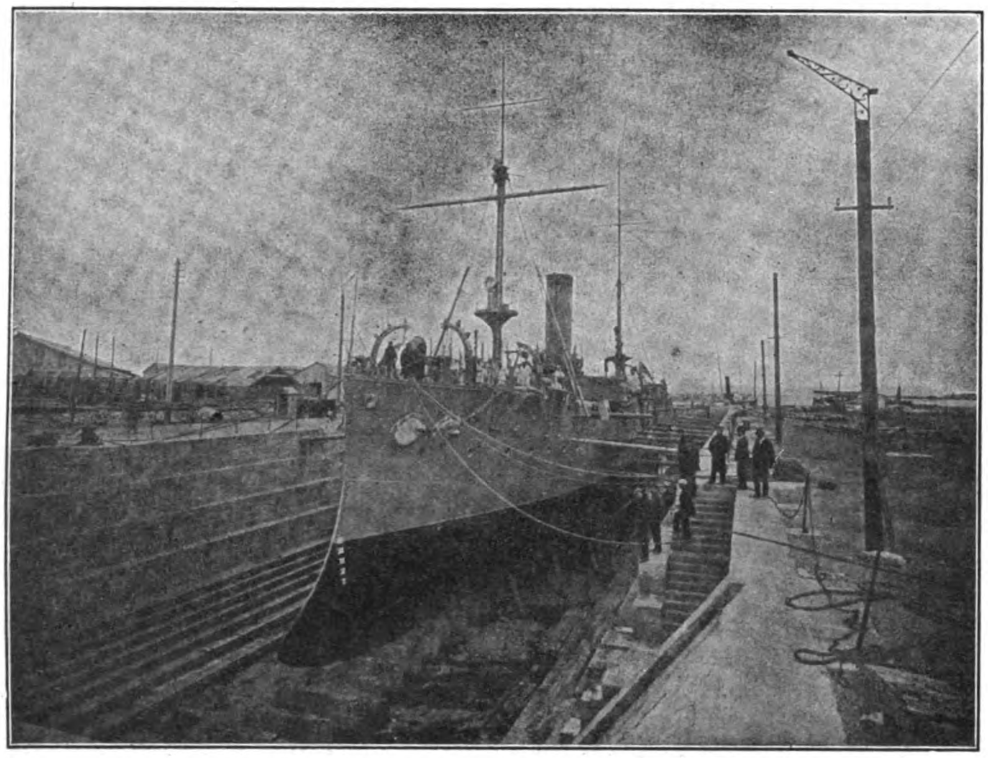
The business of the company during the following years showed such a steady increase and improvement that it was deemed advisable in 1907 to commence the construction of a third dry dock and also a mooring basin to accommodate vessels repairing afloat. The size of the basin is 600 feet long and 180 feet wide and the depth at low water is 27 feet. It is surrounded with concrete walls and was put into use in March 1909. The dry dock was built entirely of concrete of very ample thickness the working faces and entrance only being faced with granite. The available docking length is 485 feet, the width of the entrance 63 feet and the depth of water over the keel blocks is 21 feet. It was completed and put into use in November, 1910. The centrifugal pumping plant for emptying the dock was built by the company, the pumps being of the forced



YOKOHAMA DOCK COMPANY, LTD.—GENERAL VIEW OF WORKS AND DOCKS



YOKOHAMA DOCK COMPANY, LTD.—VIEW OF FIRST SHIP, SAIKIO MARU, ENTERING NO. 2 DOCK, 1897



GRANITE DRY DOCK OF THE KAWASAKI DOCKYARD CO., AT DAIREN

vortex pattern in duplicate, and are capable of drying the dock in 80 minutes.

It is the intention of the company in the near future to increase the length of the largest dock to about 620 feet to enable the larger vessels to be accommodated.

The three docks are served by 6 electric capstans placed in convenient positions for handling ships without their own steam.

Of the present directors of the company, Messrs. Kurusu chairman, Asada, Hara, Kondo, and Hutchinson, it is interesting to note that all except one were the original directors and promoters of the company.

In the year 1910 the business of the Yokohama Chiuo Soko (warehousing company) was acquired and amalgamated with that of the dock company. As the warehouses adjoin the companies mooring basin vessels are able to discharge their cargoes direct into the warehouses saving a considerable sum in lighterage in many cases.

Among the various trades carried on by the company are the following: Engineering in all branches, boilermaking, shiprepairing, constructional steel work, foundry work (castings up to 10 tons), coppersmithing, carpentering, electrical repairs, electroplating, sailmaking and rigging. The company is thus in a position to undertake the entire repairing of ships and their gear. A stock of certified tail shafts, rough turned, are kept to avoid detention as much as possible.

The tools and plant are well up to date. A large air compressor is installed with pipes along the bottom of the docks for pneumatic drills, and an oxy-acetylene plant for cutting and repairing boilers is now being installed.

The company are also owners of two powerful tow boats, six steam launches, and a floating derrick capable of lifting 45 tons over the rail of any steamer.

TSINGTAUER WERFT TSINGTAU (KIAOCHAU)

The Tsingtauer Werft was established in 1900 and originally employed only a few hundred men. It was then operated under the name Marine-Werkstatt and executed smaller repairs of the German cruiser fleet in the far East. In 1905 a large floating dock of 16,000 tons lifting capacity was launched in Tsingtau, and moored in the new harbor, where at the same time a modern crane of 150 tons lifting capacity was built. In less than one and one-half years from unpretentious beginnings there gradually grew the present large concern, which employs now an average of 48 European and 1400 Chinese.

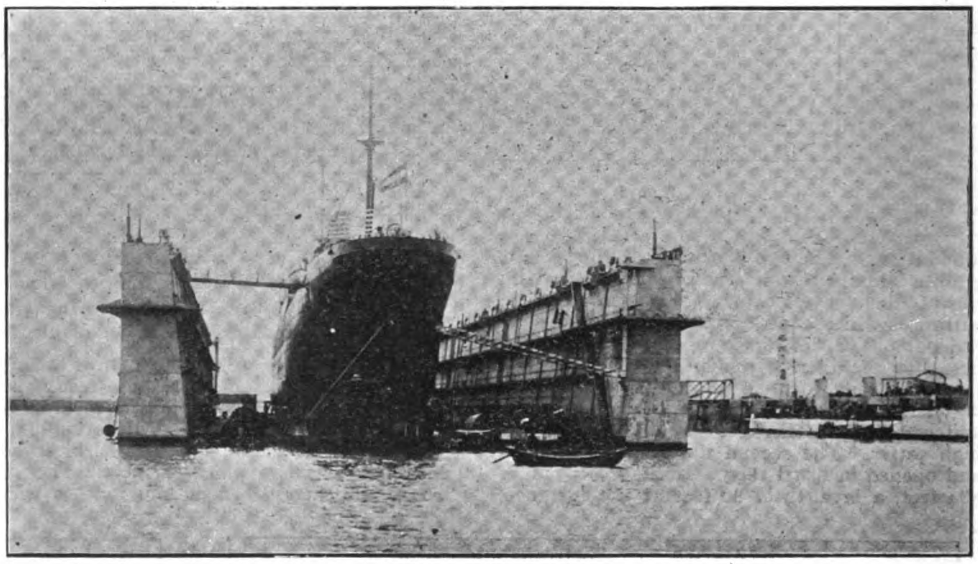
The general arrangement of the works may be seen from the accompanying plan, which shows the dock, the crane, the workshops, the coaling depot and the extensive system of railway connections.

In 1905 the large floating dock, which was built and constructed by the Gutehoffnungshutte, Oberhausen, Germany, was launched and put at once into service.

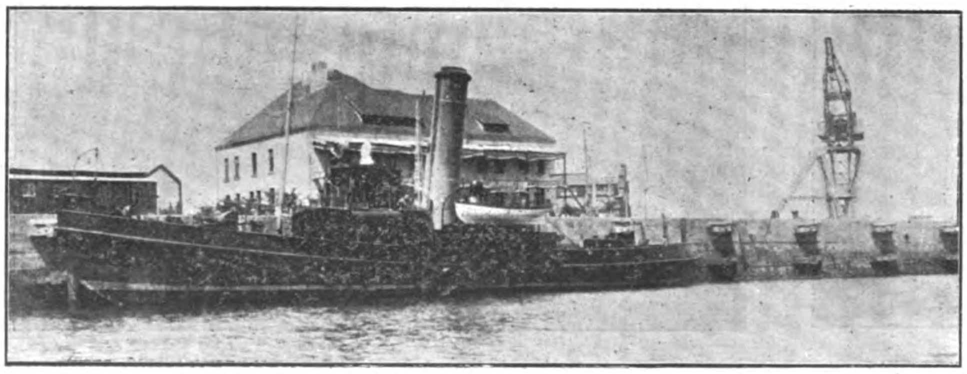
The dock measures 410 feet in length, 128 feet in breadth outside, 108 feet inside and 33 feet depth over keel blocks.

The dock's lifting capacity is 16,000 tons dead weight and it can accommodate vessels up to 460 feet in length. The dock is equipped with 10 centrifugal pumps driven by electric motors. The five dock pontoons are divided into eight watertight compartments each. The valves for each compartment are closed and opened by motors mounted on shafts, which run up to the safety deck. Four windlasses, two five pumps and two 20 ton cranes at the ends of the dock are also operated by electricity. The lighting is electric and means are provided to supply the ships in dock with electric light, fresh water and steam heating. The dock is in every respect of modern design and construction and the width is large enough to allow increasing the length up to 660 feet, whenever the demands require it. The passage from the dock to the yard is provided for by means of a wide floating bridge.

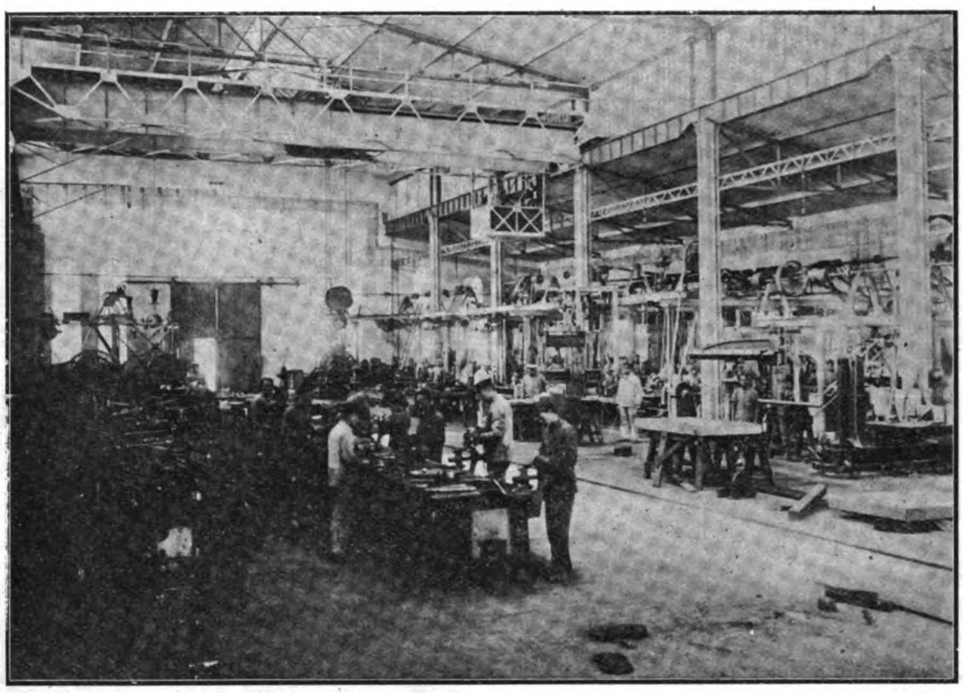
The whole length of the quays is 3,600 feet and at the most convenient point near the



THE FLOATING DOCK OF THE TSINGTAUER WERFT AT TSINGTAU



STEAM TENDER BUILT AND ENGINED BY THE TSINGTAUER WERFT



MACHINE SHOP OF THE TSINGTAUER WERFT

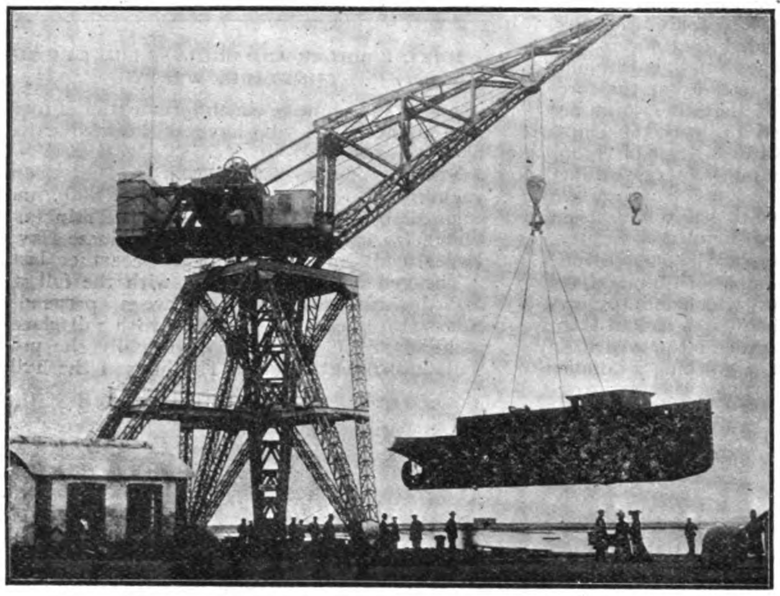
equipped with the newest electrically operated machine tools, constructed in Germany and America. The roof construction provides an ample supply of light in addition to the side and end windows. The center bay, where the heavy tools are located, is provided with a 20 tons travelling crane with a height of 22 feet above the floor. The side bays are used for smaller and medium size tools, for the store room and for the electricians' shop.

The boiler shop is 140 feet long and 70 feet wide and is also equipped with tools for working the largest pieces. The foundry is about 100 feet long and is equipped with two cupolas capable of producing cast iron for pieces up to 5 tons weight. A 5-ton travelling crane is running over the main bay. The brass foundry is in the same building and pieces up to one ton can be cast there.

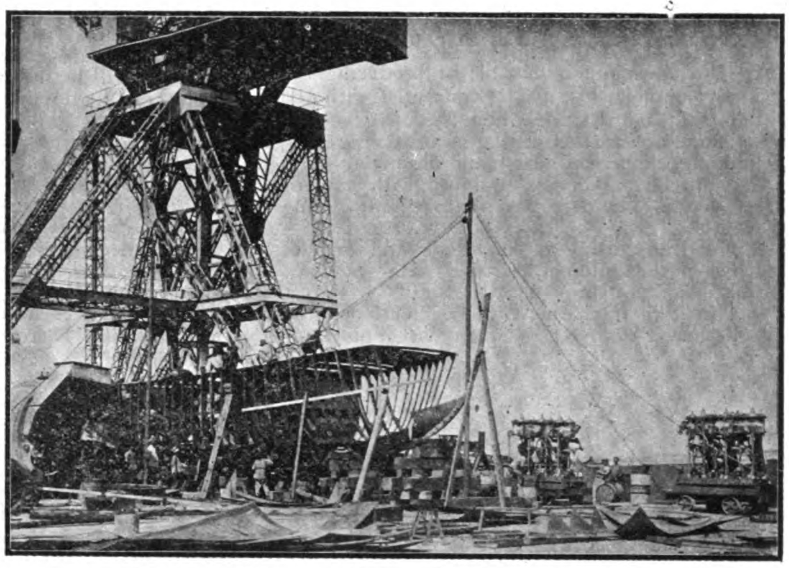
A large drying room is for drying the molds. Near to the foundry are located the pattern makers shop and the well arranged storage for patterns.

The forge and blacksmith shop is equipped with 4 electric hammers and 30 open fires for all kinds of blacksmith work. Outside of this building are the furnaces and the bending slabs for bending the frames for the vessels.

The shipbuilding shed and the place outside in front of it is devoted for punching machines, sheers, rolls, countersink machines, planers and drills of every description, and a floor for laying out steel construction.



THE 150 TON CRANE OF THE TSINGTAUER WERFT



150-TON CRANE OF THE TSINGTAUER WERFT

engine shop the 150 tons crane is erected. The crane is built by the well known German firm of Bechem & Keetmann in Duisburg. It has its own power station where the current from the city works is transformed into 500 volts.

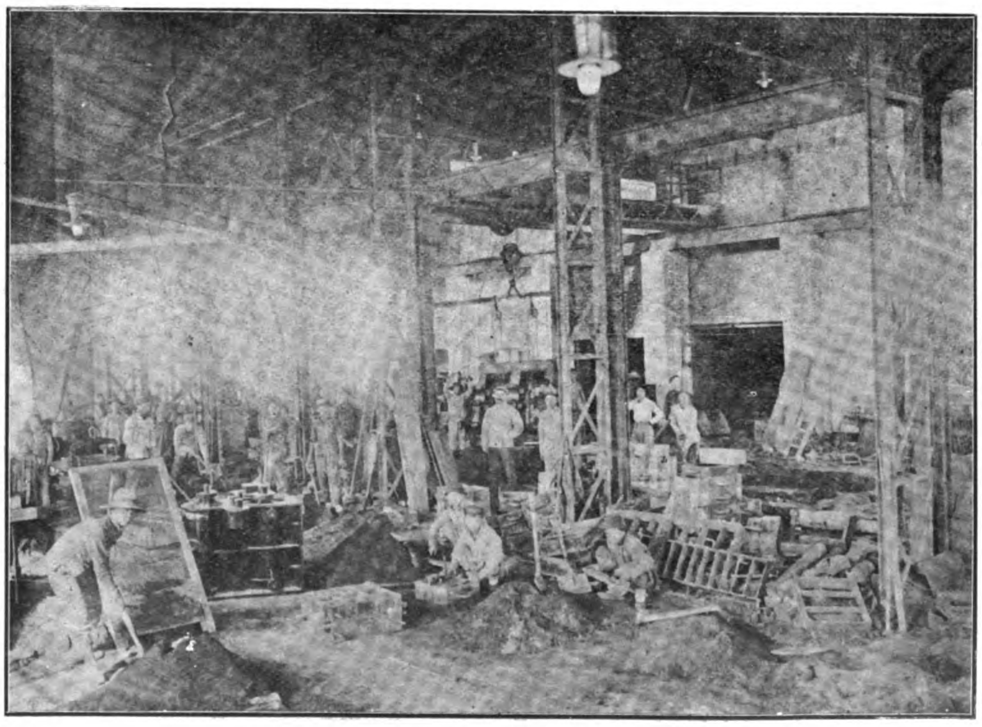
The crane can lift 150 tons with the large tackle at a distance of 40 feet from the quay while with the small tackle 50 tons can be lifted at a distance of 80 feet from the quay.

The crane has often been tried to its utmost lifting capacity i. e. 150 tons. Vessels up to about 160 feet in length are built under the crane and launched at a minimum of cost, transferring them by the crane into the water. It has proved very convenient for lifting boilers, smokestacks, engines, guns, turrets and also steam launches on board of other vessels.

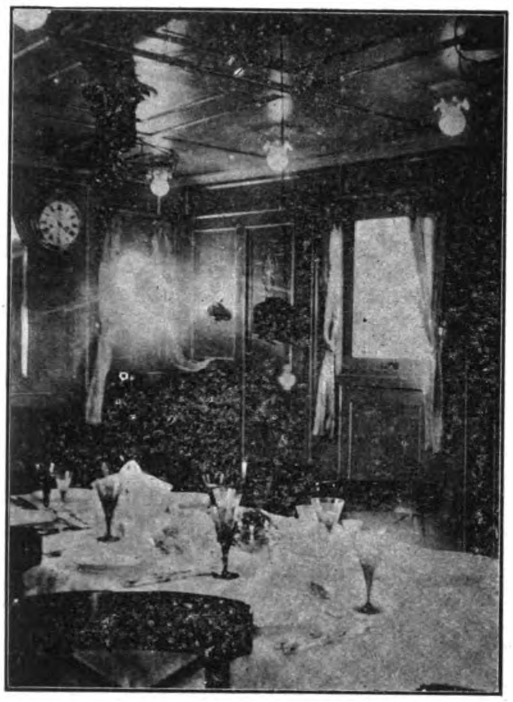
The general offices are situated in the center of the yard being within easy distance of the shops and the main storeroom.

Electricity is used throughout the whole yard for light and power. The current comes from the central station in the city. There are 3 power houses. One for operating the tools in the different shops and supplying electric light. The number of motors in the shops being 60. The second floor of the powerhouse is used for the large accumulator battery, which can supply light for 530 consecutive hours. Another power house is used for transforming the current for the dock motors. A third power house is used for transforming the current for the 150 tons crane.

The machine and erecting shop is 160 feet long and 110 feet wide with three bays and is



FOUNDRY OF THE TSINGTAUER WERFT



CABIN OF H. I. C. M. S. YACHT "WU FENG" BUILT AND ENGINED BY THE TSINGTAUER WERFT

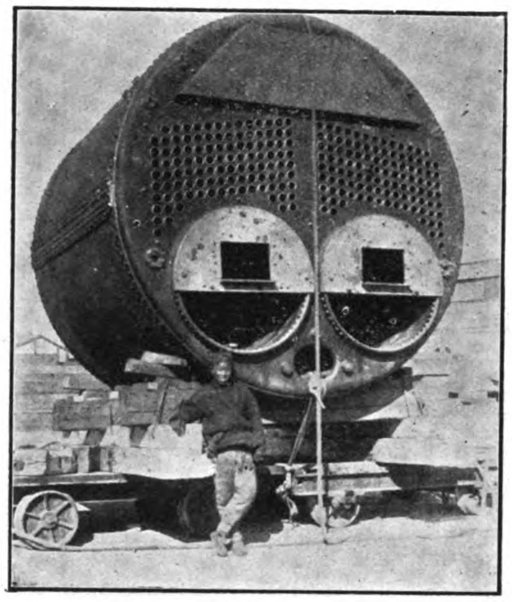
The joinershop is capable of producing the finest cabinet work and is connected with the paintshop and all kinds of upholstery can be done.

There are furthermore a sailmaker, boatbuilding, coppersmith shop and filecutting shop.

A special building is equipped with a plant for nickel plating, silverplating and gilding metal.

For transporting of materials and articles between the different shops a wide system of rails is laid out throughout the yard.

There are furthermore to be mentioned the boilerhouse from where steam is supplied for

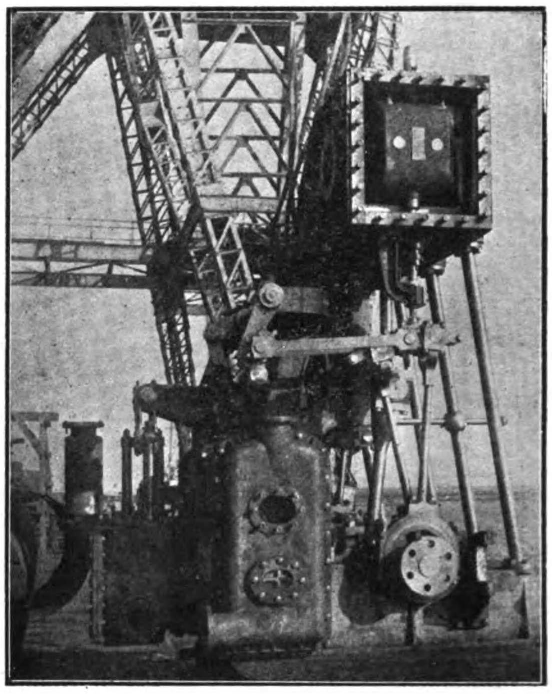


MARINE BOILER BUILT AT THE TSINGTAUER WERFT

heating purposes for all buildings and for ships, while laying in dock or alongside the pier. Living quarters are provided for officers and men together with galleys and bathrooms, while ships are under repair. From the foregoing it will be understood that the works are equipped to do any kind of work as ships, engines, boilers and the various items of equipment and fittings including joinery, cabinet work and upholstery.

Up to the present time 16 ships have been built.

In the year of 1902 the yard started to put in every shop a certain number of Chinese boys as apprentices to the work, which number was increased every year. These boys had to learn for four years each their trade and proved to be very skilful. There are now working a number

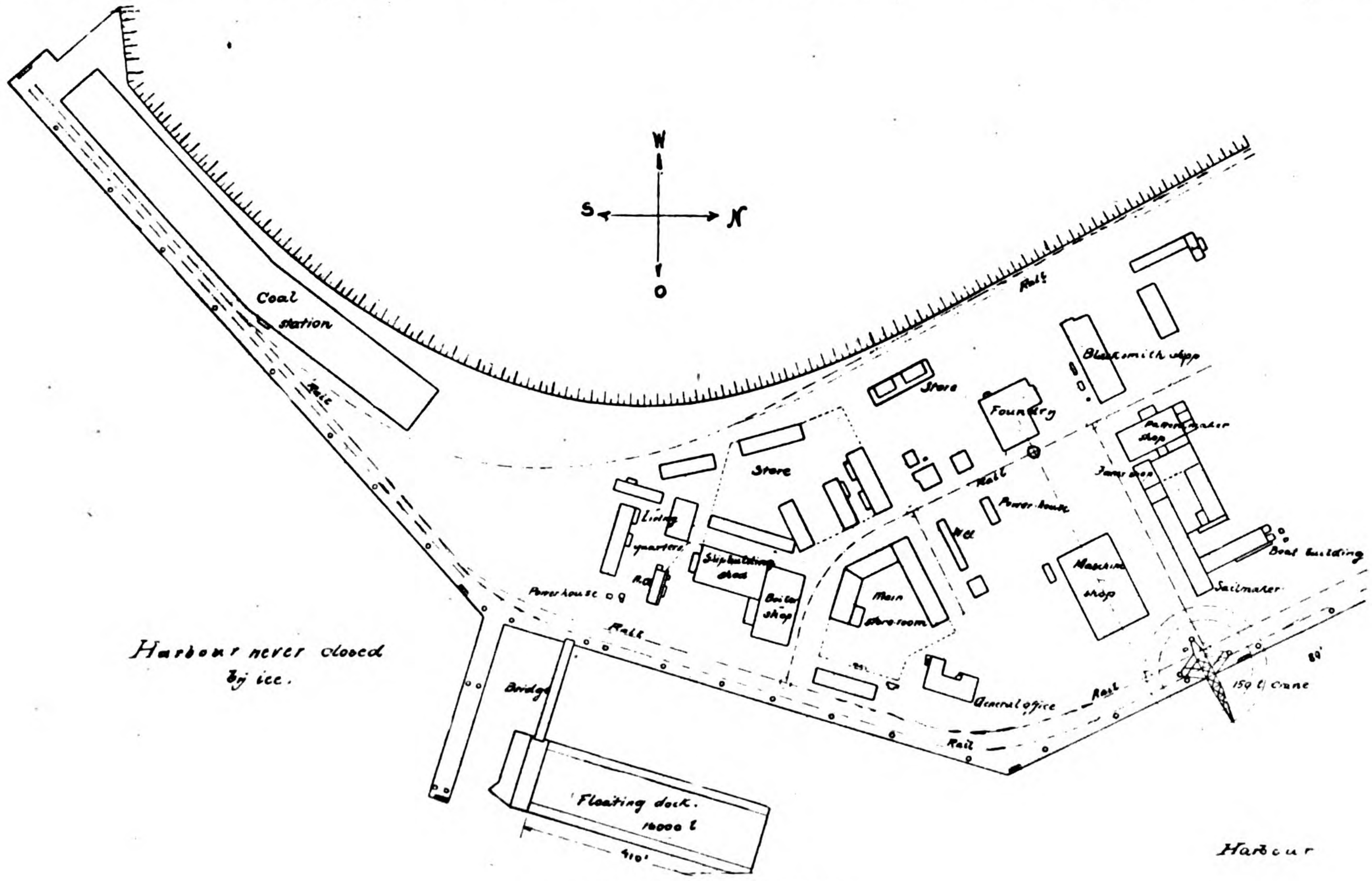


MARINE BOILER AND ENGINES BUILT BY THE TSINYTAUER WERFT

of about 400 Chinese, which form a staff of foremen or mechanics who have all been educated in the yard.

STEAM YACHT "WOO-FONG."—The steam yacht "Woo-Fong" was designed, built and engined by the Tsingtauer Werft, Tsingtau, China, for order of the Imperial Chinese Navy Department and delivered in December last.

The vessel is built of steel with the following dimensions. Length between perpendiculars 126', beam 19', depth 10' with a displacement of about 220 tons. Externally she presents a striking picture. The lines of the hull,



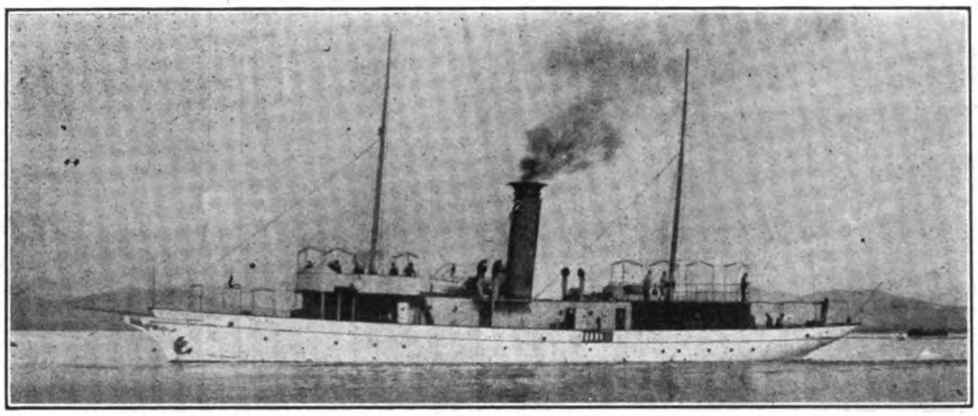
PLAN OF TSINGTAUER WERFT.

the graceful sheer and the tapering masts giving her a very handsome and yachtlike appearance. On the trials, which took place in the presence of Lieutenant Commander C. C. Wong of the Chinese navy, the yacht attained a speed of 15.1 knots on the measured mile in Kiautschou bay, thereby developing 600 indicated horse-powers. This is 1.1 knots in excess of the contract speed, which reflects great credit upon her builders. The vessel has five watertight bulkheads and a deck of selected teakwood and all deck fittings are of gun metal.

The forward deckhouse contains the dining room with sitting accommodation for 10 and is richly furnished with buffet, lockers, steam-heaters, etc., the ceiling being white enamel and gold.

In connection to the dining room there is a well equipped pantry and aft of this over the boilerroom is the galley situated. In the after-deckhouse are the accommodations for a private room for a Chinese prince, consisting of a combined sleeping and living room, a bathroom W. C., and toilet room. A private for a Chinese admiral is also situated in the after deck house. All these rooms are fitted luxuriously, the furniture, carpets, curtains, and all fittings as lamps, electric fans p.p. being supplied from Germany. Aft under deck there is a saloon and four staterooms for the prince's suite, while forward under deck are the quarters for the crew with galley, lamp lockers and stores.

The yacht is fitted most completely with Lord Kelvin's standard compass, steam capstan and steam stearing gear.



H. I. C. M.'S STEAM YACHT "WUFONG," BUILT AT THE TSINGTAU WORKS

A complete electric lighting plant is installed for furnishing light and current for electric fans. A searchlight is also fitted on top of the forward deckhouse.

The top of both deckhouses is fitted as promenade decks with seats and awnings.

The machinery consists of two sets triple expansion engines of the usual vertical marine type. The cylinders, liners, covers, and sole plate are all of cast iron and the columns of polished steel. All the shafting is of forged steel. The propellers are three blade and of navy bronze. The condenser is separate from main engines and with ample cooling surface. Three pumps are fitted to complete the pumping system of the yacht.

Steam at a pressure of 210 pounds is supplied by two water tube boilers. In the upper engine room there is situated a fan engine for producing the necessary draft for the boilers. The boiler room being operated on the closed stokehold system, when giving full speed.

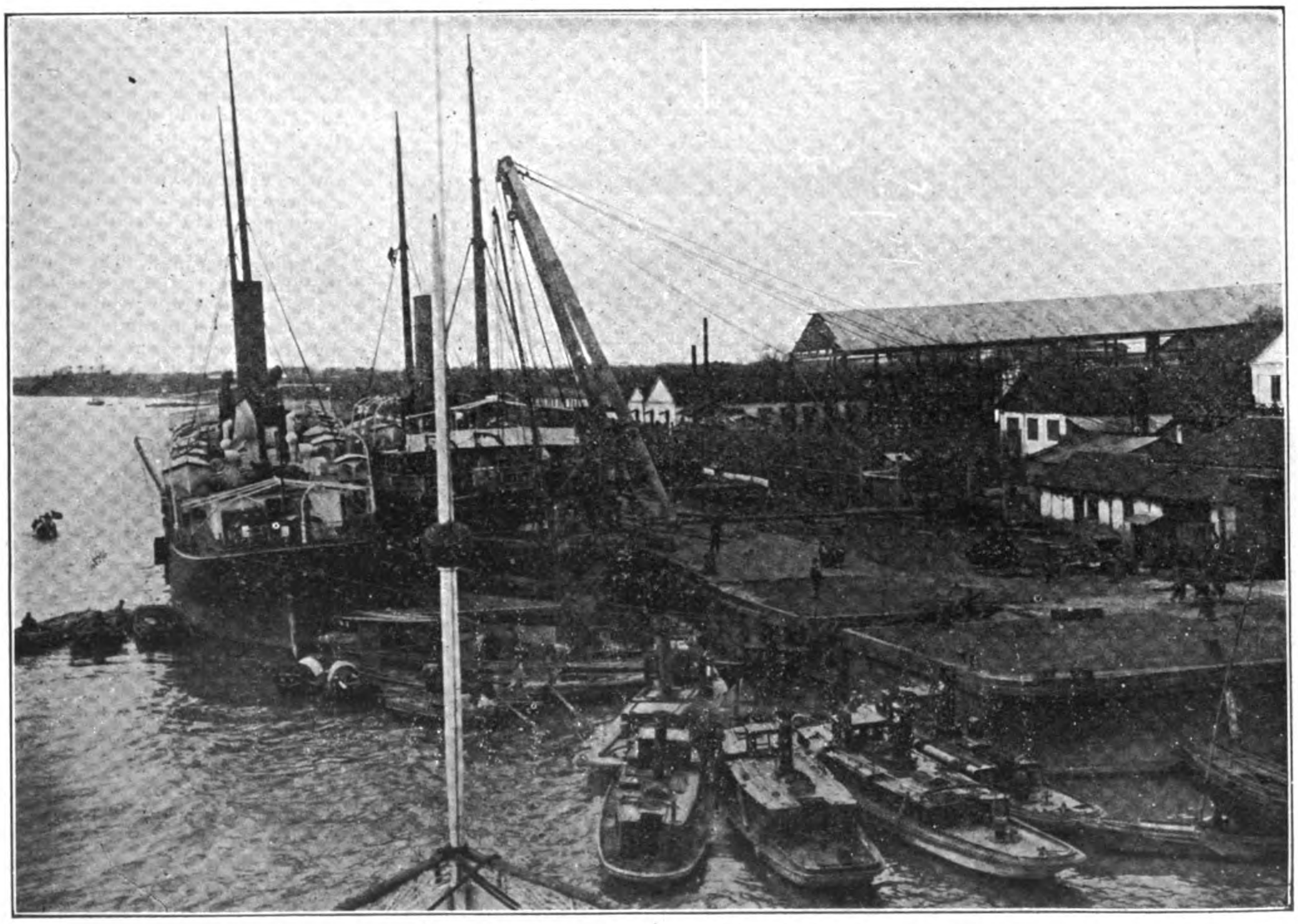
The vessel, as can be seen from the accompanying pictures, is one of the prettiest craft, that has ever been seen in the Far East.

*THE KIANG-NAN DOCK AND ENGINEERING WORKS

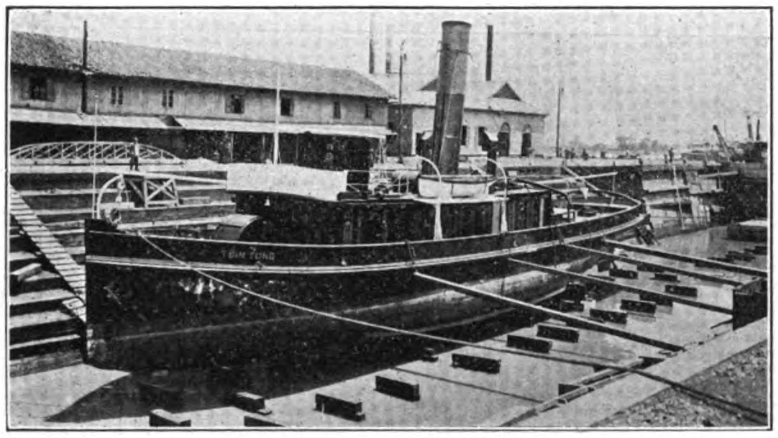
The Kiang-nan Dock and Engineering Works, one of the most enterprising and ably conducted concerns of its kind in the Far East, is situated on the left bank of the Whangpoo River, about four miles above the foreign settlements of Shanghai. The premises now occupied by the company originally formed part of the Imperial Chinese Government arsenal and dockyard at Kiang-nan, and is still contained within its walls, though the management and conduct of the business of the two establishments are now quite separate.

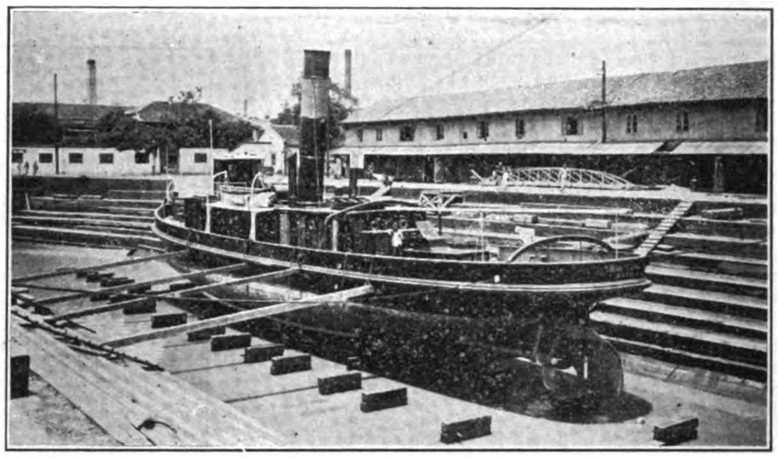
The arsenal and dockyard came into existence about forty-five years ago to meet the requirements of the Chinese Government for the manufacture of cannon and the repair of the few small ships of war they at that time possessed, and has gradually grown to its present splendid proportions. In the spring of the year 1905 the dockyard portion of the arsenal, comprising an area of about four acres, lying between the steel works and gun factories on the one hand and the Whang-poo River on the other, was taken over by the present

* Reproduced from the Far Eastern Review of Feb. 1907.



WEST WHARF OF THE KIANGNAN DOCK AND ENGINEERING WORKS, SHANGHAI.



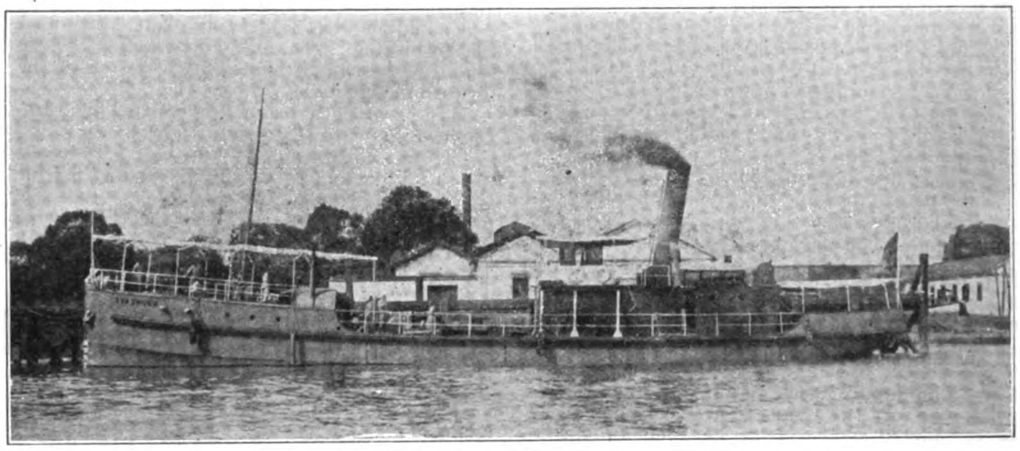


TWO VIEWS OF THE TSIN YUNG IN THE KIANGNAN DOCKS

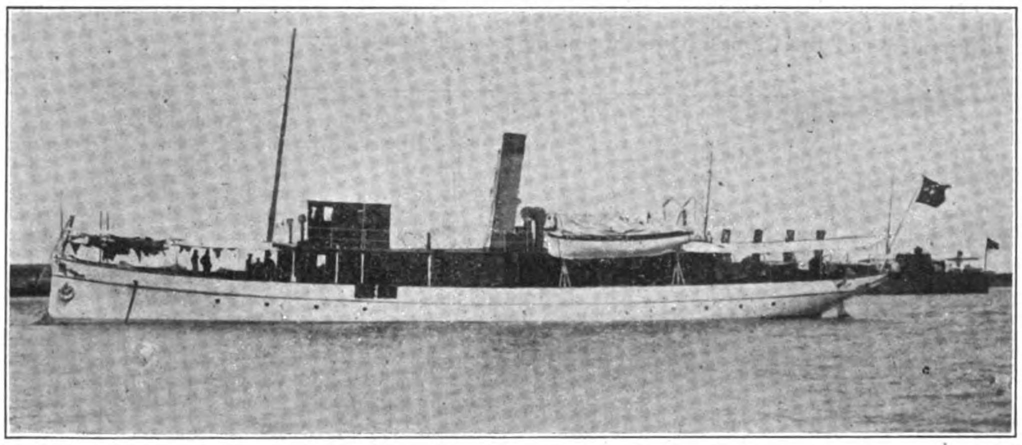
company and launched as a going commercial concern, and they at once entered into keen competition with existing establishments of the same kind in Shanghai.

The directors of the Kiang-nan Dock and Engineering Works originally were Admiral C. P. Sah and Captain Y. K. Woo, both of the Imperial Chinese Navy, and Mr. L. Basse. The two latter gentlemen have since retired, and in their place Mr. Kwong-kwo-wah, the present incumbent, was installed as director.

Mr. R. B. Mauchan, a well-known and enterprising member of the engineering staff of Messrs. S. C. Farnham, Boyd, and Co., Limited, of Shanghai, was appointed manager, and still retains that position, assisted by an able staff, principally drawn from the same source. All these gentlemen were well known in the engineering world of the Far East, and to their enterprise and ability the rapid growth of the Kiang-nan Dock and Engineering Works may be mainly attributed.

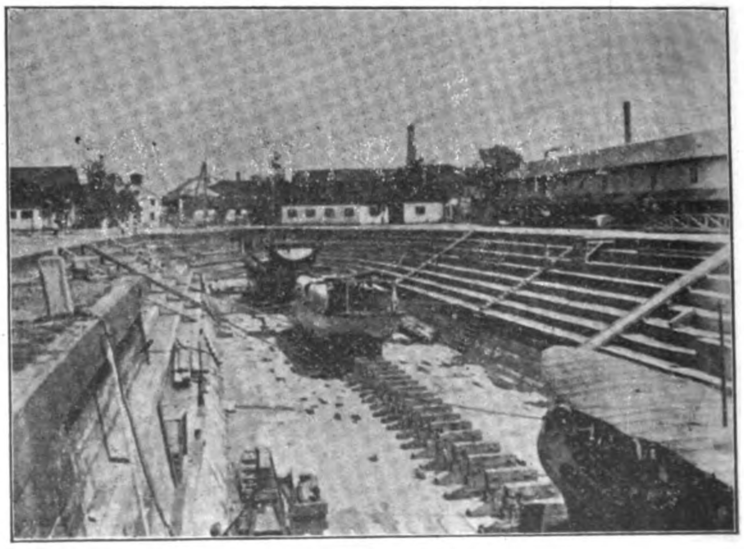


THE "KAN CHUEN," A STEEL SCREW WATER BOAT



H. I. C. M. S. "AN FOON," A STEEL SINGLE SCREW DISPATCH BOAT

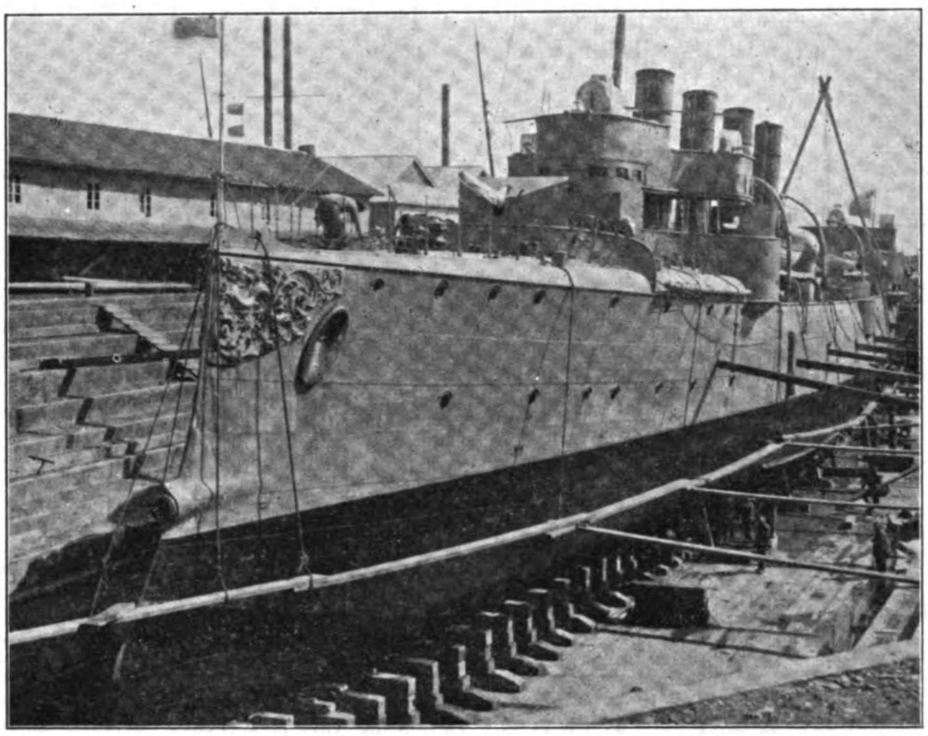
Dry Dock. The dry dock, which was very small and totally inadequate for the purposes the company had in view when they took over the works, was the first thing that claimed attention, and steps were immediately taken to enlarge its capacity and to bring it in line with existing establishments of the same kind in Shanghai. Its length was increased to 375 ft. and its width at bottom to 80 ft. the whole of the bottom new piled and decked, and new keel-blocks installed throughout. The somewhat antiquated pumping machinery was wholly removed, and a new modern pumping plant installed, consisting of two 20-in. and one 10-in. centrifugal compound pumping engines. The pumping plant is contained in a large steel tank sunk about 12 ft. into the ground and resting on a huge concrete foundation. Steam is supplied by two large Lancashire boilers, arranged with separate flues and funnels, while an



KIANGNAN DOCK—LENGTH OVER ALL, 385'; LENGTH ON BLOCKS, 375'; WATER ON SILL, 19'; DOCK ENTRANCE, TOP, 70', BOTTOM, 60'

auxiliary boiler of the marine type is fitted for use in case of emergency, all with a working pressure of 100 lbs. per square inch. A feedwater heater, with feed pumps of the Worthington type in duplicate, is supplied for feeding the boilers. The pump-house, though built primarily for housing the boilers and pumping machinery, also contains the dynamo engine room, with lavatory and bathrooms for the convenience of the crews of ships using the dock, dock tool store, etc. On either side of the dock entrance are wharves, alongside of which ships entering or leaving the dock or refitting can lie. Both these wharves have recently been extended about 40 ft. further into the river to get deeper water alongside, and a Priestman dredger is provided to remove any accumulation of silt that may occur there or at the dock entrance. On the upper wharf is fitted a heavy pair of sheer legs, capable of lifting 60 tons, with boiler and winding engine complete. In the river and abreast of the company's premises are three large mooring buoys for the accommodation of ships undergoing repair. On the opposite shore of the river is a deep-water anchorage, where the Chinese men-of-war in port usually lie.

Boiler Shop.—Passing up the west side of the dock and bearing to the left, one comes to the shipbuilding yard and slips, where tow-boats, launches, and other small craft are hauled up for repair. Near by is the boiler shop, with its punching, shearing, and plate-bending, plate-edge planing, and drilling machines, plate furnace, and frame-bending floor, and the usual accessories of a modern boiler shop and shipyard. The machinery of this shop is driven by a large Tangye noncondensing engine, while alongside of it is another engine of similar dimensions, which is kept ready for immediate use in the event of anything happening to the former. Steam for these engines is supplied by two large Lancashire boilers at a pressure of 75 lbs. per square inch.

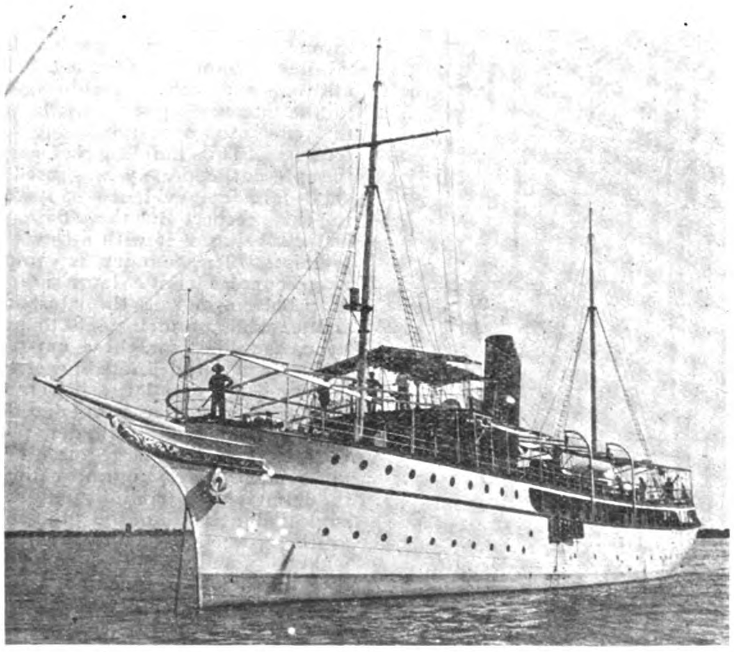


KIANGNAN DOCK WITH A CHINESE CRUISER ON THE WAYS

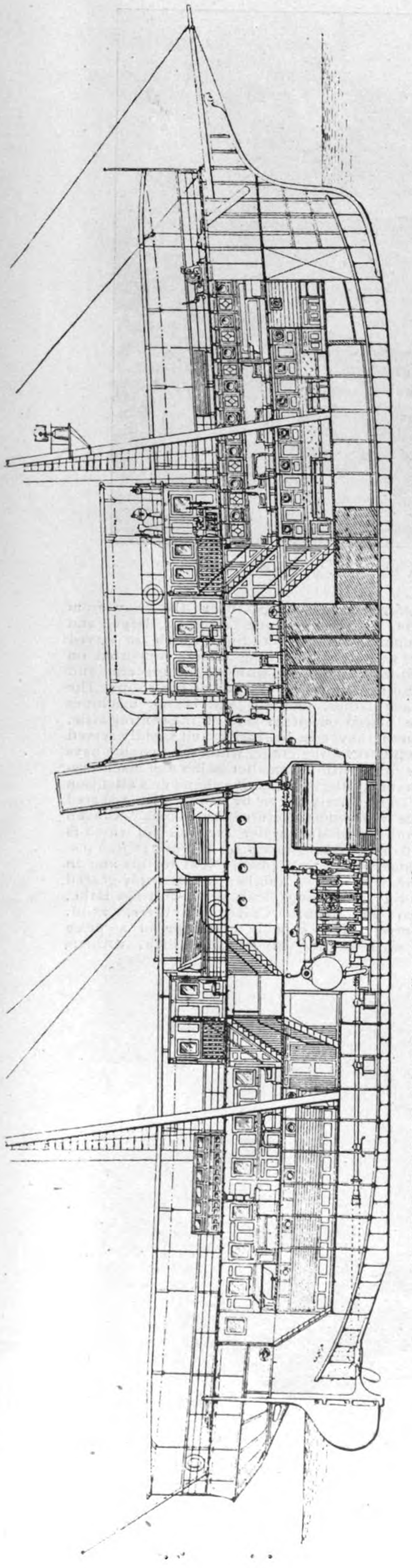
YANGTSZE RIVER PIRATE CHASER, BUILT BY THE KIANGNAN DOCK & ENGINEERING WORKS FOR THE VICEROY OF NANKING

Admiralty House Drawing and General Offices.—Retracing one's steps and passing round the head of the dry dock, on the right is seen the mould loft, carpenters' shops, and a number of huge godowns used for the storage and seasoning of timber. On the left and standing back some distance from the roadway, with a fine stretch of lawn in front of it, stands Admiralty House, a large and handsome building recently erected, forming the residence of Admiral C. P. Sah, Commander-in-Chief of the Imperial Chinese Navy, and containing also the various offices in connection with his department. Nearly opposite this building are situated the company's offices, the ground floor of which is occupied by the directors, manager, and accountants, while the whole of the upper storey is devoted to the use of the drawing office staff.

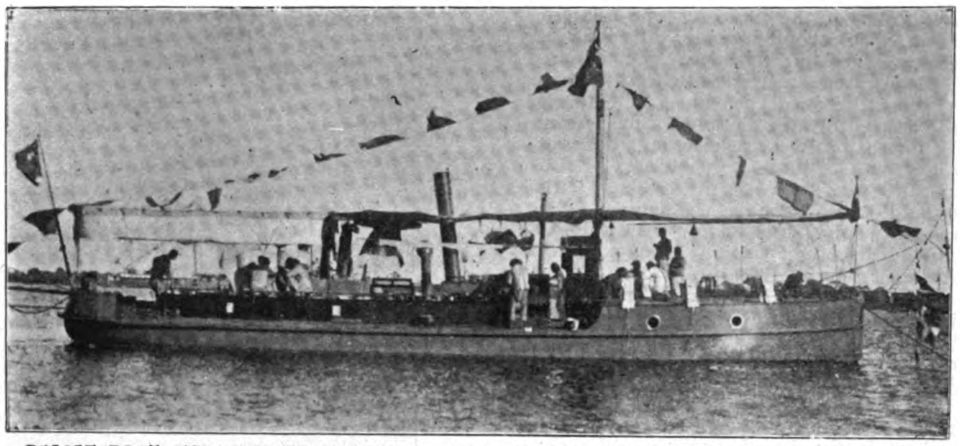
Machine Shop.—Just over the way from here is the machine shop, a large and commodious new building, which is served by a 40-ton travelling crane, supported on cast-iron columns, with steel girders, and running the whole length of the shop. The heavy lathes, planing, and boring machines are placed on either side of the central aisle, where they can be easily and rapidly served by the travelling crane, while the two side bays are fitted with the smaller lathes and machines. On first entering this fine shop one's attention is immediately taken by a huge triple-geared face lathe, manufactured by Messrs. Craven Brothers, of Manchester, the chuck of which is capable of taking in a piece of work 10 ft. 6 ins. diameter by 3 ft. long. Next to this and in line with it is another heavy triple-geared sliding, surfacing, and screw-cutting lathe, also by Messrs. Craven Brothers, 25-in. centres, and capable of taking in a piece of work 32 ft. in length, which, with its



YACHT OF H. I. H. PRINCE HSUI, BUILT BY THE KIANGNAN DOCK & ENGINEERING WORKS



500-TON TWIN-SCREW STEAM YACHT "LIEN-CHING," BUILT BY THE KIANG-NAN DOCK AND ENGINEERING WORKS, SHANGHAI



POLICE BOAT FOR INLAND WATERS, BUILT BY THE KIANGNAN DOCK & ENGINEERING WORKS FOR THE NANKING VICEROY

two double slide rests, carries four tools, all of which can be put in operation at the same time, rendering this a very valuable machine indeed. Next comes a heavy horizontal drilling and boring machine by Smith, Beacock, and Tannett, with two massive boring heads, each of which can be worked independently of the other, and capable of doing a large variety of work. Immediately adjoining this is a heavy vertical planing machine with horizontal traverse, which can take in and machine a piece of work 10 ft. 6 ins. by 16 ft. long. A large horizontal planing machine comes next, and several smaller machines. The other side of the shop under the crane is similarly fitted with heavy machines, among which is a large American slotting machine, two useful horizontal boring machines, and two large radial drilling machines. The two side bays, as mentioned above, are closely packed with a large variety of lathes, planes, slotting, and drilling machines, manufactured by Archdale, Whitworth, Craven Bros, McOnie and Co, and other well-known makers. Power for this part of the works is supplied by a large horizontal non-condensing engine, fitted with Meyer's expansion valves, while in an engine-room immediately adjoining is a large double-cylinder engine of about the same power, ready to be put into operation at once should the necessity arise, it being a principle of the management to take all reasonable precautions to prevent stoppage of the works in the event of a breakdown. Steam for these engines is supplied by two large Lancashire boilers at a pressure of 75 lbs. per square inch, one always being laid off for cleaning while the other is at work.

Foundry and Other Shops.—Passing now through a small auxiliary machine shop containing a number of lathes, wheel cutting, milling, and other machines, which, owing to the increase of busines it became necessary to put into operation, one comes to the foundry. This building before its transfer to the present company was used as a shot and shell foundry, evidence of its former activity in this respect in the shape of huge projectiles being met with all over the extensive premises. The foundry is equipped with two 2-ton cupolas and a large new cupola with drop bottom and all the latest improvements, and capable of melting 8 tons of metal per hour, the blast for these cupolas being supplied by a large Roots blower. The foundry is served by one large jib crane capable of lifting 15 tons, one 3 ton, and several smaller cranes. Immediately under the jib of the 15-ton crane is a large circular steel casting pit capable of casting propellers up to 18 ft. in diameter. A similar, but smaller, pit is sunk under the jib of the 3-ton crane. Situated as these works are on a vast alluvial flat on what is practically a water-logged soil these pits are a necessary adjunct to any foundry turning out castings of large size, and the same thing applies to all kindred establishments in the Shanghai district. The brass foundry contains three ordinary and one Carr's patent crucible furnaces, and a great variety of brass castings ranging from a few ounces to several hundredweights are being constantly turned out.

Smiths' Shop.—Adjoining the foundry is the pattern-makers' shop, and in close proximity is the smithy. This latter shop contains a large steam-hammer, served by two 4-ton jib cranes, and capable of welding propeller shafts up to 14 ins. diameter, which has frequently been done in these works. Two other smaller steam-hammers are provided for ordinary work, and all are in constant use, the smithy in works of this kind being generally a very busy shop indeed. The coppersmiths' shop adjacent to the smithy is also usually well supplied with work, but calls for no special comment. Rails are laid from the wharves and dock into the various shops for the expeditious handling of heavy pieces of machinery. The whole of the shops, dockyard, and offices, including the Admiralty House, are effectively lighted by electricity, while an efficient water service, supplied by water from the adjacent Shanghai Inland Water Works, with numerous hydrants all over the works, testifies to the care and thoughtfulness of the management.

Facilities for All Kinds of Repair Work.—The engineering department is specially equipped for the expeditious handling of all kinds of marine repair work from the renewal of plates to the lengthening of any kind of a vessel while the installation of machinery and repair thereof outside of marine work is becoming an important feature of the company's activity.

Construction.—Chinese waters are dotted with the output of steel and teak-wood vessels ranging from a cargo lighter to Imperial cruisers that represent the capacity of the company's plant. Among the important vessels turned out in recent years, especial attention is directed to the steel twin screw yacht Lien-ching built for H. I. H. Prince Tsai Tsun. This vessel has a displacement of 500 tons and is one of the most handsome in appearance turned out in Far Eastern yards. Its dimensions are: Length, 173 feet over all; beam, 25 feet; depth, 20 feet; draught under steam, 9 feet. The vessel is divided into eight compartments including six water-tight bulkheads and bunker bulkheads and has three decks. The Imperial compartments are aft the main deck while the deck forward is devoted to a handsome reception hall. Two Scotch boilers, equipped with Howden's forced draught system, supply steam at a pressure of 180 pounds provide motive power expressed by two sets of triple expansion engines, cylinders 10, 16.5, and 26 5 inches in diameter respectively with an 18 inch stroke, h. p. indicated, 900. Air and circulating pumps constructed by the Kiangnan company and Weir's feed pumps are installed. The most modern steam steering control is part of the modern equipment and the electric light plant installed has a capacity of 6,000 c. p. At the speed trials the vessel easily maintained 14 knots.

The Kiangnan Works employ about 500 Chinese who are found exceptionally effiicient under European supervision as is generally provided in the different departments.

THE FAR EASTERN REVIEW

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CONTENTS

	Page
The Mitsu Bishi Dockyard and Engine Works at Nagasaki	375
Tung Tai Tseung Kee & Co	387
The Mitsui Dockyard and Works at Kobe	388
The Kawasaki Dockyard Co. Ltd	391
Yokohama Engine & Iron Works Ltd	396
The Yokohama Dock Co	398
The Tsingtauer Werft (Tsingtau)	400
The Kiang-nan Dock & Engineering Works	403
Development of Shipbuilding in Japan	407
The Motor Boat Invasion	408
Decreasing the Danger of Diving	408
A Marine View of Electrical Progress	408
Nicolas Tsu Engineering Works	409
Wilks & Jack Ltd	411
The Osaka Iron Works	412
The Hakodate Dock Co., Ltd	418
The Tokyo Ishikawajima Shipbuilding Yard Ltd.	413
The Shanghai Dock & Eng. Co. Ltd	414
Vulcan Iron Works, Ltd., Shanghai	421
The Yangtsze Engineering Works, Hankow	422
The Engineering & Shipbuilding Works, Ltd. (Shanghai)	424
The China Engineering Co., Shanghai	426
The Hongkong & Whampoa Dock Co. Ltd	427
The Taikoo Dockyard & Engineering Co. Ltd. Hongkong	429
Foochow Arsenal & Dockyard	433
The Whampoa Dock & Navy Yard	433
W. S. Baily & Co.,	434
Macdonald & Co.	434
The New Amoy Dock Co. Ltd.	438
The Amoy Engineering Co. Ltd	436
Tanjong Pagar Dock Board	436
Sabang Harbor & Bay Co	437
Riley Hargreaves & Co Ltd	438
China Borneo Co. Ltd	440
The Borneo Trading Co.	440
The Varadero de Manila	441
Marine Boiler Water Treatment	441
San Nicolas Iron Works	442
Manuel Earnshaw & Co. Ltd	443
H. R. Cooper & Co	443
Messrs. Castle Bros. Wolf & Sons	443
The Manila Trading & Supply Co	444
The China General Engineering Co	444
Government Docks and Engineering Works, Manila	445
U. S. Floating Dock Dewey	446
Remington Kerosene Marine Engine	446
The Motor Boat in the Philippines	447
Other Dockyards in the Far East	450
Bids Opened	451

DEVELOPMENT OF SHIPBUILDING IN JAPAN

In presenting a general review of shipbuilding in the Fart East an effort has been made to give a comprehensive idea of the large part that shipbuilding and engineering works are taking in the development of Oriental trade and the encouragement of local industries. And perhaps the most striking feature of shipbuilding development with which we have to do is that so closely connected with Japanese history during the last 20 years.

A native canoe-shaped craft utilized in fishing and trading along the coast of Japan and with Korea during the third century gave place in the fourth century to vessels constructed after Korean models. Following Korean construction communication with China by sea was established and a combination of Chinese and Korean junk construction seems to have been adopted generally, but up to the end of the tenth century vessels of over 100 tons were exceptional. It might be said that not until 1542, when the Portuguese began trading with Japan, was any attempt made to construct vessels of sufficient size to venture beyond local waters, but about this time it is known that Japanese vessels navigated Eastern Seas as far South as Australia.

The latter part of the seventeenth century the registered vessels operating under the Shogun government's licenses numbered 200, many of them from 100 to 130 feet in length. European methods were first introduced by William Adams, the shipwrecked English pilot who made his home in Japan and engaged in the shipbuilding trade. He built two modern vessels of approximately 100 tons each about 1635 and there was every indication of renewed activity in this line of endeavor, but in 1638 the Shogun government restricted foreign trade to China, Korea and Holland, prohibited the construction of ships western type and intercourse with foreigners, and until 1853, or over 200 years, only small junks for the coasting trade were built in Japan.

With the advent of Commodore Perry the limit on the size of ships constructed was raised, but little progress was made in modern construction.

In 1854 Captain Putiatin of the Russian man-of-war "Diana," having suffered shipwreck at Shimoda, decided to construct a ship of 200 tons in which to return to Russia and a temporary shipyard was established at Kimizawa near that place. The Japanese shipwrights employed continued the yard and built several vessels of the same type. They became known as the Kimizawa type.

The first steam warship owned by Japan was presented by the Dutch government in 1855 which was followed by the purchase of a screw-propelled warship purchased by the Shogun from Holland in 1857. Following this was a present from the late Queen Victoria to the Shogun of a steam yacht.

It was at this juncture that the Government of the Shogun became interested in shipbuilding. A site for yards was chosen at Nagasaki in 1857 and Dutch shipwrights and engineers placed in charge. Then followed works at Yokohama, Yokosuka and Ishikawajima by the government and in 1864 the Chiyodagata, the first warship propelled by a steel screw, was constructed at the last named yard

In 1861 private ownership of western type vessels was permitted and that date may be said to mark an almost imperceptible beginning of Japan's phenomenal maritime development and especially in the department of shipbuilding and engineering construction.

In 1876 Mr. I. Hirano leased the Ishikawajima Engine Works, owned by the Navy Department, and this was the first important western shipbuilding enterprise under private direction established in Japan. Following it were the works at Osaka established by Mr. E. H. Hunter, 1880; the purchase of the government works at Nagasaki by the Mitsu Bishi firm in 1884 and the establishment of the Kawasaki works at Kobe in 1886. In 1894 the Kosuga-maru, 1,500 tons displacement, constructed by the Mitsu Bishi, was the largest vessel that had been built in a Japanese dock, as the great majority of vessels owned by local shipping companies were purchased abroad.

The Sino Japanese war gave quite an impetus to the industry, but it was not until the passage of the encouragement act of 1896 that Japan's remarkable progress in this line of activity began. Then followed the construction of the Hitachi-maru by the Mitsu Bishi Dockyard of 6,000 tons with seven other steamers of 3,000 tons each completed by 1899. The Mitsu Bishi continued building larger vessels for the merchant marine until the recent construction of the Tenyo and Chiyo Maru of 13,400 tons equipped with turbine engines crowned the splendid record of achievement by this company.

As an evidence of the success of the Encouragement Act may be noted the increase in the number of shipyards from 66, in 1896, with an output of 36 steamers aggregating 5,860 tons and sailing craft 950 tons, to 240 shipyards turning out 67 steamers with an aggregate tonnage of 50 795 tons in 1909 and sailing craft of 15,188 tons.

In naval construction Japan has made the most wonderful strides. Up to 1883, the largest vessels turned out were wooden gunboats of about 1,500 tons. Then followed composite and steel construction and, in 1891, the coast defence ship Hashidate of 4,000 tons was completed. This was the largest warship built until 1906 when the battleship Satsuma, 19 200 tons, was constructed by the Yokosuka Dock Yard. The first steel cruiser of 1,750 tons was launched at Kobe in 1888.

The Government established naval dockyards and arsenals at Kure and Sasebo in 1889. A dispatch boat of 1800 tons was launched in 1897 from the Kure yards. All the armor and guns are furnished from the Kure arsenal. The battleship Aki of 19,800 tons was constructed here and with the improvements made super-dreadnoughts may be turned out with expedition. The latest naval construction is the Battleship Kawachi at the Kokosuka yards, and the Settsu at Kure, each having a displacement of 20,850 tons and a speed of 20.5 knots.

And so no term other than revolution may be used to express the transformation that has taken place in the last fifteen years in Japan's shipbuilding industry. Every year records some improvement, some advancement that keeps her abreast of the times.

When Japan set out to make a place for herself among the leading maritime nations of the world, she recognized the seriousness of her task and the many sacrifices involved in the realization of her ambition. There was a singleness of purpose predominating that could not have been realized were it not for the patriotic support given by the taxpayers of Japan. The statesmen who have been directing national affairs during the last twenty years have been fully justified by results and in no department of industry has this been demonstrated more strikingly than in the wise policy of encouragement to Japanese shipbuilding and foreign carrying trade. At one time criticism of this policy took the form of accusation in that Japan's statesmen had been guilty of promoting class legislation designed to build up a special industry at the expense of the Japanese taxpayer. But those critics have been silenced by the era of general development in all branches of trade and industry following the predominence of Japan's ships upon the Pacific and in the presence of her flag in the world's leading marts. There has evolved a national pride in her extensive merchant marine that represents in addition to its commercial potentiality a force for auxiliary naval defence unequalled by any nation with possibly the exception of Great Britain. And it all involved great faith in the nation's future, statesmanship of a high order and the sacrifice that honors a nation.

THE MOTOR BOAT INVASION

During the last few years, the internal combustion engine has been perfected and its effect upon water transportation facilities is now phenomenal. The year has been marked by Lloyds' adoption of rules governing the survey of internal combustion engines using petrol or paraffine fuel. This has been due to the advance made in adapting this class of engine to large vessels, and the growing interest in marine motor power in this form.

But what is more striking is the strides taken in utilizing the internal combustion engines for motor power for small craft, and extending their use to the cargo and passenger carrying trade in the shallow streams and river deltas. When first introduced the motor boat became the ideal small pleasure craft and no doubt the sporting interest in increased speed had much to do with the development of this modern engine which has invaded the ends of the earth.

In this special number will be found evidence that the progressive shipbuilding yards of the Far East, no matter how extensive their operations, are not neglecting motor craft construction. Indeed, if one is to judge by the hundreds of ways in which the motor engine is being utilized to facilitate local trade in the many deltas and small rivers in the different far eastern countries and dependencies, it would seem that this means of transportation is doing more to "hurry the east" than any other influence. The laborious poling of the casco and lighter is giving place to more certain muffled motor power of the internal combustion engine. It may be adapted to the banca, the lorchas, the sampan or the native prao. For the carrying of mails it serves towards rural delivery expansion and its adaptability to light cargo and passenger traffic places formerly isolated sections within easy reach of desirable markets. The motor boat is doing much to supplement the work of the great ocean liners by expeditious local distribution. It finds a market for the isolated producer and encourages greater industry and necessarily greater prosperity. The Philippine customs finds the motor boat the ideal cutter to run down smugglers; the revenue department invades the interior and enforces the law with a case of gasoline; while the tourist and hunter board a motor boat at Manila and spend weeks among the most delightful scenic attractions of the islands. The Canton delta has its fleet of motor boats and in Shanghai, Hongkong, Singapore, and Bangkok motor boat construction is becoming a most important feature of the shipbuilding industry.

The development of the petroleum marine engine in recent years has been given a great deal of attention and its popularity promises to greatly increase as its durability and adaptability to local conditions becomes more generally accepted. European and American manufacturers have brought the petrol or gasoline engine to a high state of efficiency and they have been actively engaged for years experimenting on various models of kerosene motors. That their efforts in this direction are meeting with success is demonstrated by the increased number of reputable kerosene motors on the market. European and American manufacturers of internal combustion engines cannot fail to secure unusual returns for well directed effort introducing their motors in Far Eastern countries where the appreciation of that class of motor power is becoming more and more marked.

DECREASING THE DANGER OF DIVING

The writer had an opportunity to view the antiquated diving methods employed on harbour improvements some years ago in an Australasian port. The diver came up before his usual time, and brought with him an octopus that must have measured a good ten or twelve feet from tip to tip of tentacles. It was clinging to his back, twined round all his limbs, but fortunately had not anchored itself to any of the rocks or piles. The beast objected to his atmospheric bath and slid back into the sea through a two inch gap between the planks of the wharf.

Dangers of this kind are inevitable to the diver's art, but much has been done of late years to protect him from perils of faulty apparatus and inefficient means of communication. A number of these improvements are due to Messrs. C. E. Heinke & Co., of London. The pumps, dress, helmet and boots have all received attention.

Slight improvements have been made from time to time until the aggregate of changes has become very considerable. The old style diving dress was by no means a comfortable garment. The seams at the feet and neck leaked; the pressure of the wrist outlets numbed the hands; the cut of the sleeves prevented the hands being brought together at the front without great discomfort and chafing. Messrs. Heinke have at length found how to make a foot with but one seam, how to form a watertight cuff without undue pressure, and how to reinforce seams without making the dress unwieldy and stiff. Their latest pattern of boot consists of a solid brass casting for protection to the foot. An ingenious arrangement of straps prevents the foot from being accidentally withdrawn. Every detail of the equipment has received the same minute care.

For light, the diver is offered his choice of oil or electric lamps. The former is supplied with air through a branch hose from the air pump. The latter are fed by a special robust flexible cable. For communicating with the attendants above, there is a patent speaking apparatus that depends for its action on an extra air tube, fitted with sound discs in the diver's helmet. A more elaborate device consists of a telephone adapted for submarine work. Transmitter and receiver are suitably placed inside the helmet, and a call button operated by the diver's chin. The conductors can be embedded in the rubber wall of the air tube or in the life line. The equipment for the use of two divers working together makes provision for communication between them as well as to those on boat or land.

The uses to which Messrs. Heinke & Co.'s apparatus has been put form a romance in themselves. When the S. S. "Japan" was burned the first Heinke suit ordered was lost in a wreck. Another was then sent out, the first recovered by its use, and both were then successfully employed to salve £77,000 worth of gold and silver coin in fused masses. Seven of the most celebrated divers have, by the use of this apparatus, salved between them over £10,000 000 of bullion and over 100 vessels. Another curious case was the recovery of a chased silver hunting knife valued at £7000. This was recovered from the S.S. "Cadiz," wrecked off Ushant, after two months submersion.

In pearling naked diving is being fast replaced by diving with apparatus, and it speaks well for the manufacturers that a round thousand of Heinke outfits are in daily use by semi-savage operators.

Homelier uses for this apparatus are found in dock and harbour constructions, dock working and maintenance, emergency ship repairs and a hundred and one other branches of the marine industry. For all purposes, Messrs. Heinke & Co. turn out over seven hundred equipments yearly. Their wide experience and personal knowledge of diving work serve to maintain their position as leading Submarine Engineers.

A MARINE VIEW OF ELECTRICAL PROGRESS.

It is plain to the most casual observer that matters maritime are being rapidly brought under the domain of electricity. The peculiar convenience and flexibility of this form of power have quickly appealed to the business instincts of shipbuilders and naval engineers, and its use has grown from small beginnings until the largest yards and docks are now electrically driven throughout, and electric propulsion of ocean liners and battleships is in the immediate future. The rapidity of this advance has been greatly helped by the enterprise of the great electrical manufacturing interests.

The use of electricity on shipboard was for long confined to lighting, where its popularity was clearly due to its handiness and safety. At the present time electric devices of every kind are to be found on the great ocean liners—fans, lifts, and a dozen other appliances minister to the comfort of passengers, while in winches, pumps, tools, forced draught fans, and coal conveyers, electric power is helping the shareholders to higher dividends. It is in the navy, however, that the same principle has been carried to its greatest development.

A full list of the uses made of electric power on battleships would make the present article like an auctioneer's catalogue. It will be enough to mention gun laying, ammunition hoists, torpedo charging, and the automatic closing of watertight compartment doors as examples of what is being done.

The proposals for marine propulsion on a practical ocean-going scale are so numerous and so untried that this is hardly the place to deal with them. Turbo-electric schemes have now been worked out in great detail, and much ingenuity expended on them. Actual designs have been quoted on to various interested bodies, including some of the great naval powers. One of the most promising patents in this field is held by Mr. J. N. Bailey—an engineer of one of the Westinghouse Companies.

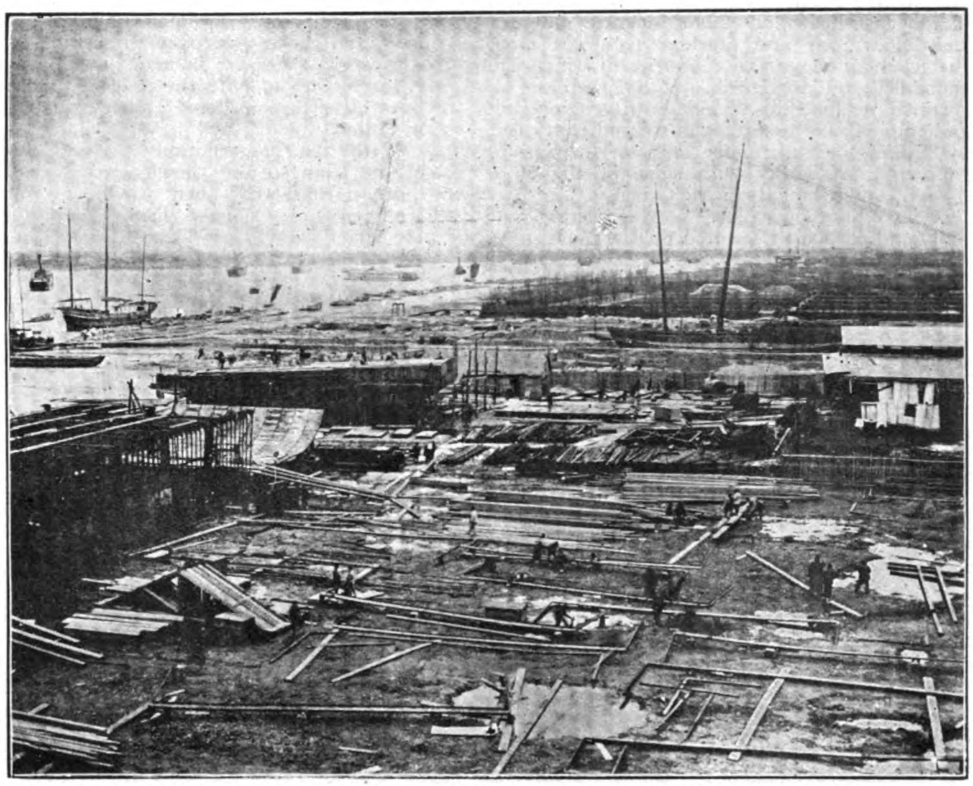
For shipbuilding purposes electric power has become indispensable, owing to the large area covered by a modern shipyard, and to the peculiar nature of the problems involved in putting up the frame and plates. No other system of power distribution can economically solve this problem, or can provide for the rapid concentration of power at the necessary point in cases of emergency. The dockyards of the British Admiralty afford an example of the individualised electric drive applied to shipbuilding and naval work. Here motors of all sizes are employed for machine tool drive. The ease with which electric power may be accurately measured has enabled the dockyard authorities to test the power consumption of their tools, and in this way a mass of most valuable information has been collected. In the Boston yard of the U. S. Navy, there may be seen a particularly interesting dry dock pumping plant. Direct coupled centrifugal pumps are used, designed to have an increasing efficiency with increasing head. As the dock empties the head becomes greater, and, with a constant flow of water, more load comes on the pump. The increased efficiency makes for a constant load on the motor. Individual driving, at any rate for the larger tools, is surely winning a victory over the group drive. The brightening of the shop due to the absence of shafting and belts, the economy of eliminating idle gear in motion, the ease of arranging for overtime in certain tools—these are advantages too valuable to be overlooked by the wide awake shop manager.

Until comparatively recently, many engineers considered that electricity could not satisfactorily replace hydraulic power for cargo handling appliances. This idea has now been completely exploded, and received its final death blow a few weeks ago, when Messrs. Dixon and Baxter read their paper before the Institution of Electrical Engineers on the equipment of Rothesay Docks. Cranes, coal tipplers, elevators, and capstans are now being electrically driven in all parts of the world, and doubtless the Far East will not be behind hand in adopting this most convenient of all systems.

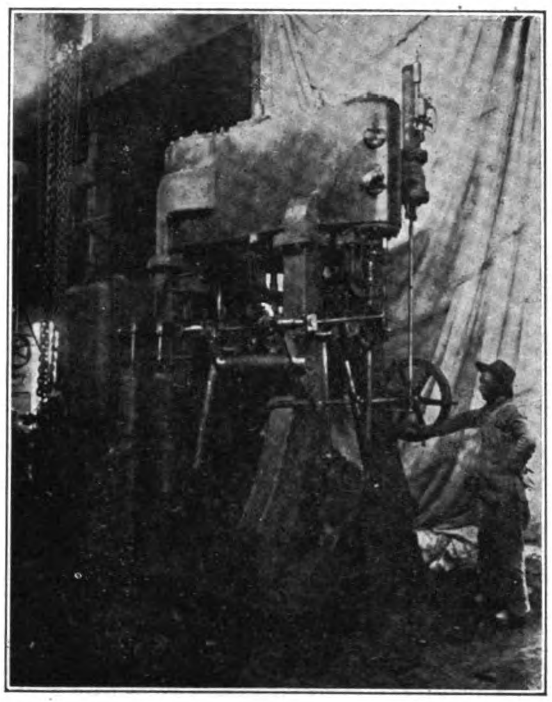
PROPOSALS FOR COAL.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., January 7, 1911. Sealed proposals in triplicate, subject to the usual conditions, for furnishing approximately 65,000 tons of coal to the Quartermaster's Department, U. S. Army, during the Fiscal Year 1912, will be received here until 11:00 A. M. May 8, 1911, and then opened. Information and blank forms furnished upon application. F. G. HODGSON, Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

THE NICOLAS TSU ENGINEERING WORKS, SHANGHAI

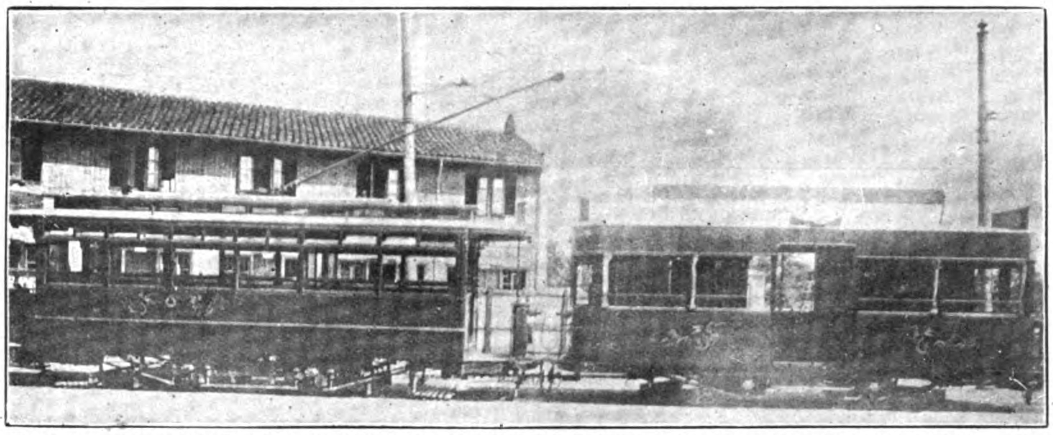
In contrast with the remarkable engineering advancement of Japan, is the apathy of China in these industries which make for national progress. Engineering is still in its infancy in China, and there are no characters in her language to convey the meaning of the simplest technical terms. Aside from the great Hanyang Iron & Steel Works, and a few small machine shops in the treaty ports, engineering



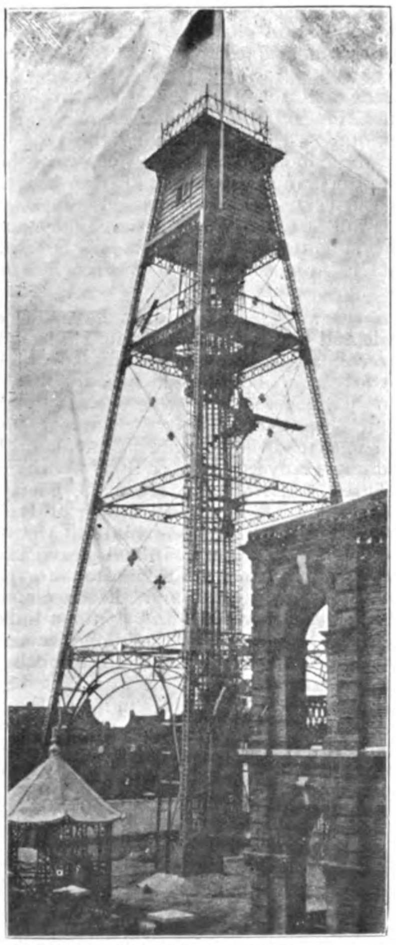
GENERAL VIEW OF SHIPBUILDING YARD OF THE NICOLAS TSU ENGINEERING WORKS, SHANGHAI



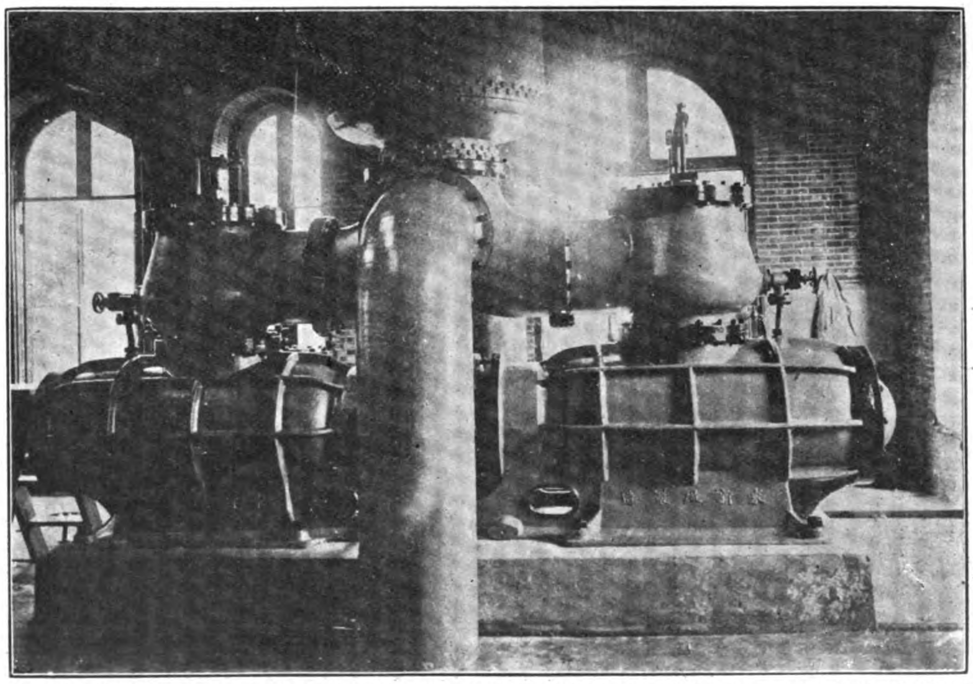
ENGINE FOR STEAMER BUILT IN NICOLAS TSU'S SHOPS



TRAILER CAR, TYPE B; BUILT BY THE NICOLAS TSU ENGINEERING WORKS FOR THE SHANGHAI AND FRENCH TRAMWAYS



STEEL WATCH TOWER WITH ALARM BELL, FOR THE CHINESE CITY, SHANGHAI



DIRECT ACTING PUMP BUILT BY THE NICOLAS TSU ENGINEERING WORKS FOR THE CHINESE INLAND WATER WORKS, SHANGHAI. CYLINDER 26″ DIAMETER: STROKE 52″ 30 R. P. M.: CAPACITY 4,000,000 GALLONS IN 24 HOURS

is in the hands of foreign concerns. Railways are being constructed, mills and electrical plants installed, and mines opened, but for lack of trained and efficient technical men, the machine shops and foundries of China are controlled by foreigners. It is therefore a surprise to find in Shanghai an engineering and shipbuilding works, operated and controlled by Chinese capital, under Chinese supervision, comparing favorably with some of the large foreign establishments of the Orient.

A visit to the Nicolas Tsu Engineering and Shipbuilding Works, located on the Whangpoo River near the Kiangnan Arsenal, is a revelation to the foreign engineer. Here is found a complete up to date plant, with French equipment turning out all kinds of engineering work, run under the direction of Mr. Louis Tsu, a graduated engineer from one of the French technical colleges.

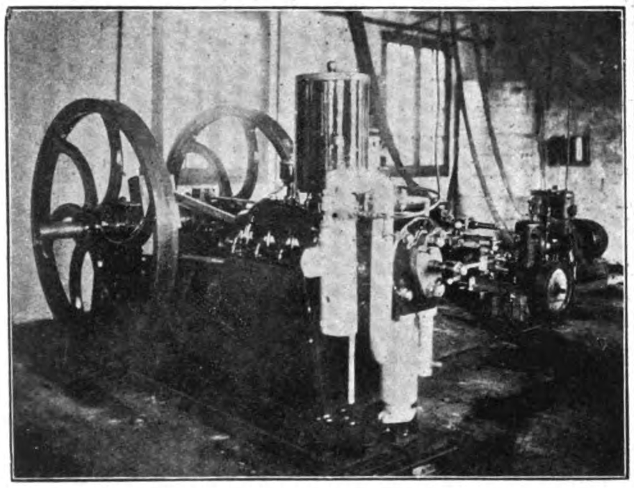
The works comprise the machinery and fitting shop, iron and brass foundries, blacksmith shop, boiler makers' shop, carpenter and model shop, railway car erecting and finishing shop, shipbuilding yard, oil engine and electrical shops, technical and drawing office.

The staff and workmen number over 500 men, and the works cover an area of 11 acres. The works specialize in many machines and it is interesting to note the progress made along lines hitherto considered as exclusively foreign in China.

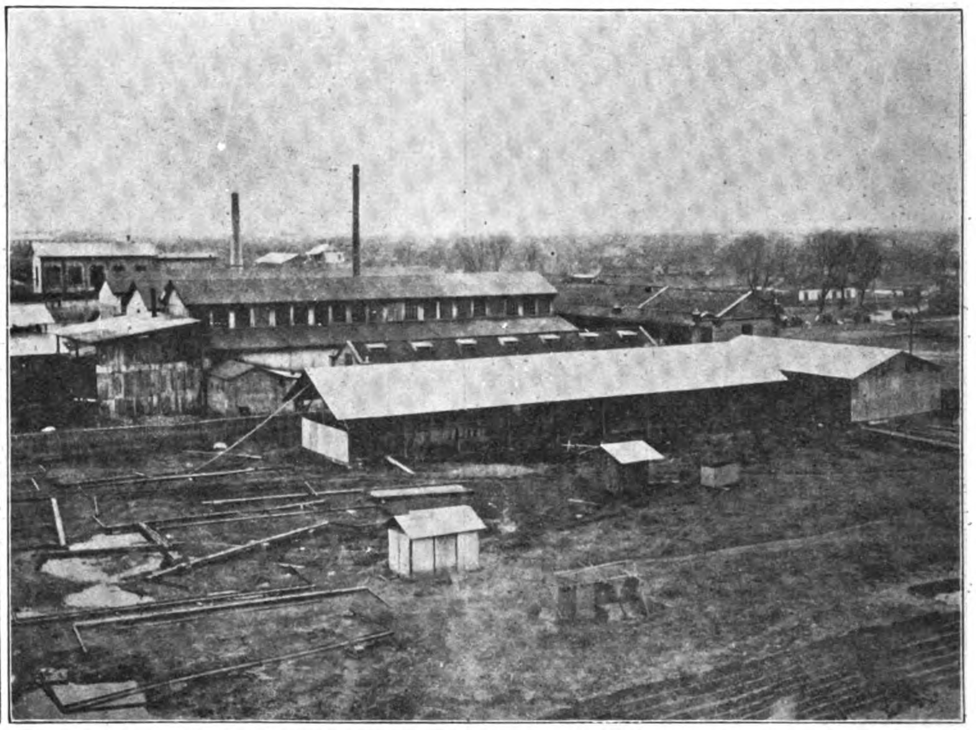
With the construction by native capital of the Kiangsu and Chekiang railways it was quite natural that their patronage would be tendered to a Chinese firm, especially when the latter's works are located only a short distance from the Shanghai terminus of the line, and with the orders of these companies as a start, the Nicolas Tsu Works have firmly entered the field for participation in the supply of Chinese railway material.

Passenger and freight cars, bridges, water tanks, crossings, switches, rail fastenings, pile drivers, jacks, winches, cranes, drills, etc., have been made to the order of various railways. A few of the special orders will give a better idea of the extent of their activity.

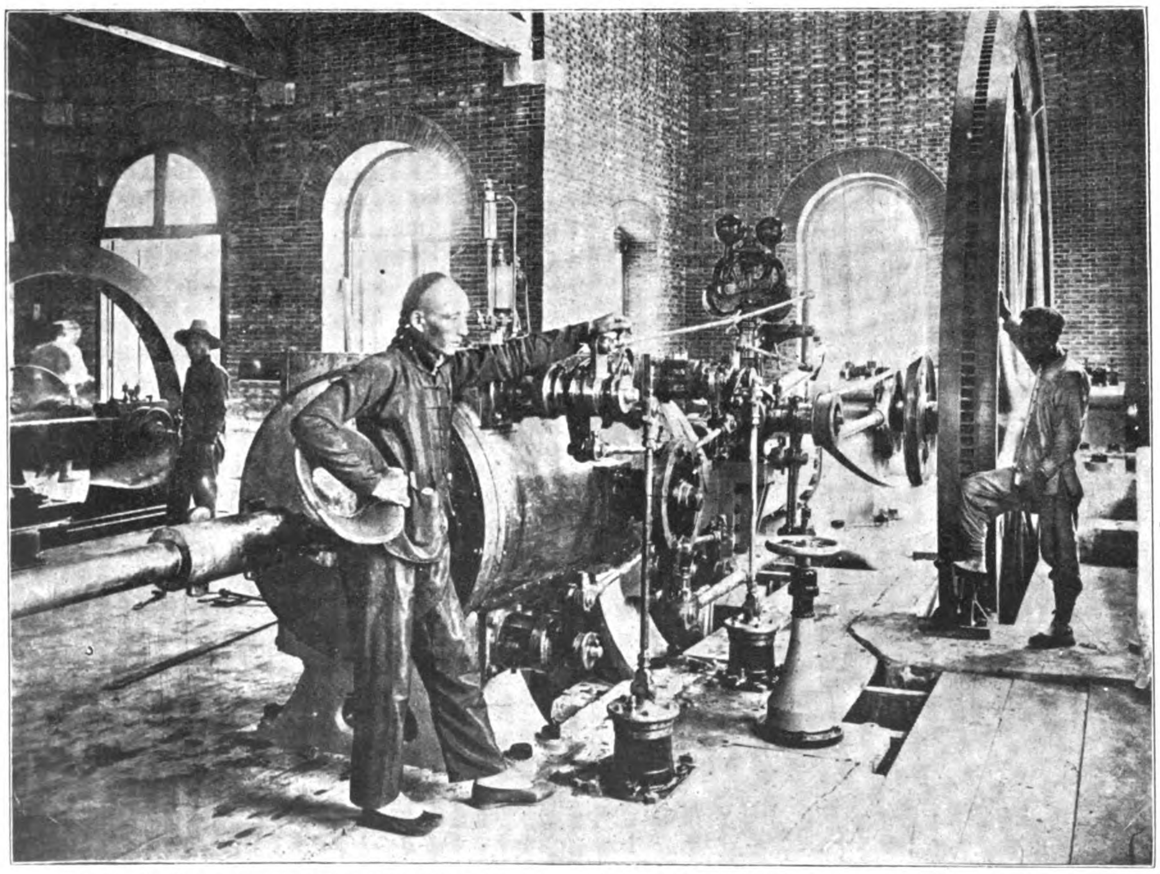
Railway Material.—Steel Roadway Bridge for Ningpo, 200 ft. long in 3 spans. For the Chekiang and Kiangsu Railways many steel girders for bridges 20 to 100 ft. long were constructed; 2 railway passenger coaches for the Kiangsu Railway; 6 30-ton freight wagons for the Kiangsu Ry.; 12 passenger coaches, 1st, 2nd and 3rd class, following the type of those on the Shanghai-Nanking line, were built for the Chekiang railway, and the water tanks, pile drivers, jacks, winches, crossings, switches and rail fastenings for the Szechuen-Chuen-han, Chekiang and Lo-tung railways. Several trailer cars for the Shanghai and French Tramways were also built.



25 H. P. KEROSENE ENGINE MADE BY THE NICOLAS TSU WORKS



GENERAL VIEW OF NICOLAS TSU ENGINEERINC WORKS



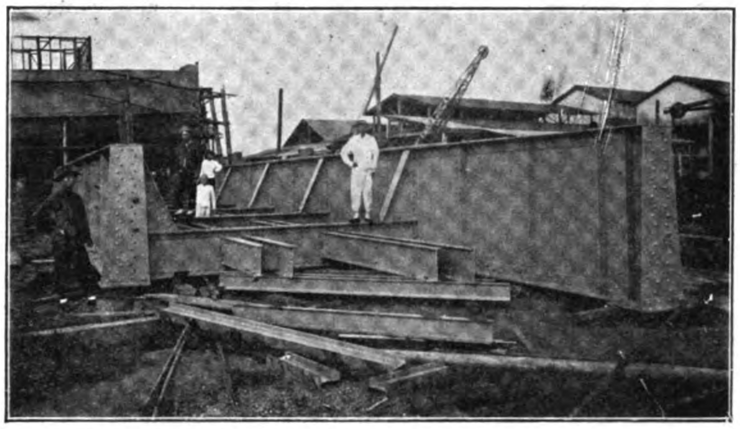
CORLISS ENGINE BUILT BY THE NICOLAS TSU ENGINEERING WORKS FOR THE CHINESE INLAND WATER WORKS, SHANGHAI. DIAM 62 × 52 STROKE; DIAMETER OF FLY WHEEL 22 FT., 30 R. P. M. COMPLETE WITH CONDENSER AND AIR PUMP

Shipbuilding.—The works have successfully built and engined: One steam cargo and passenger boat, 160 ft. long and 350 H. P.; two steam cargo and passenger boats 140 ft. long and 300 H. P., for Chinese Navigation Companies; several steam tow boats 70 to 90 ft. in length for the Szechuen-Chuenhan Railway and the Hanyang Iron & Steel Works.

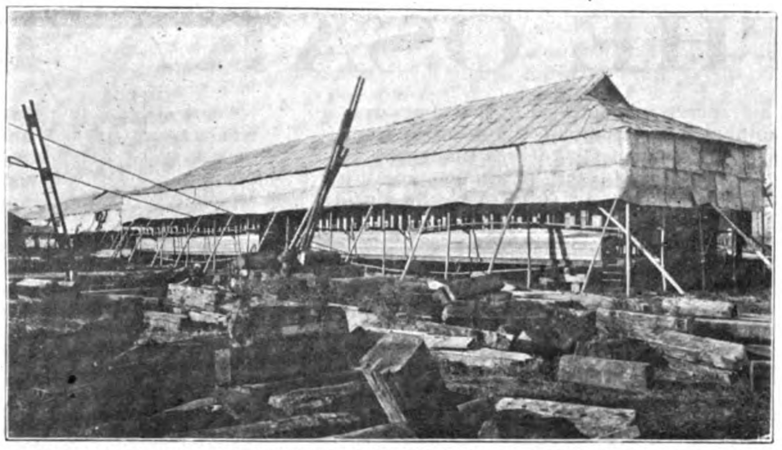
Three shallow draft steamers, 60 ft. long 2 ft. draft; 70 ft. long 2 ft. 6 inch draft; and 90 ft. long, 4 ft. draft, were built to the order of the China Merchants Inland Navigation Co. Steel lighters from 100 to 300 tons for the East Asiatic Dredging Co. and the Szechuen Railway and the pontoons and pontoon-hulks from 180 to 250 ft. long for the Yangstze service of the Cie. Asiatic de Navigation and others have been constructed at Tsu's works.

Kerosene and gasoline motors, for marine and stationary work from 5 to 25 h. p. are made for the native trade, and many small rice and ginning mills are being operated with Tsu's engines.

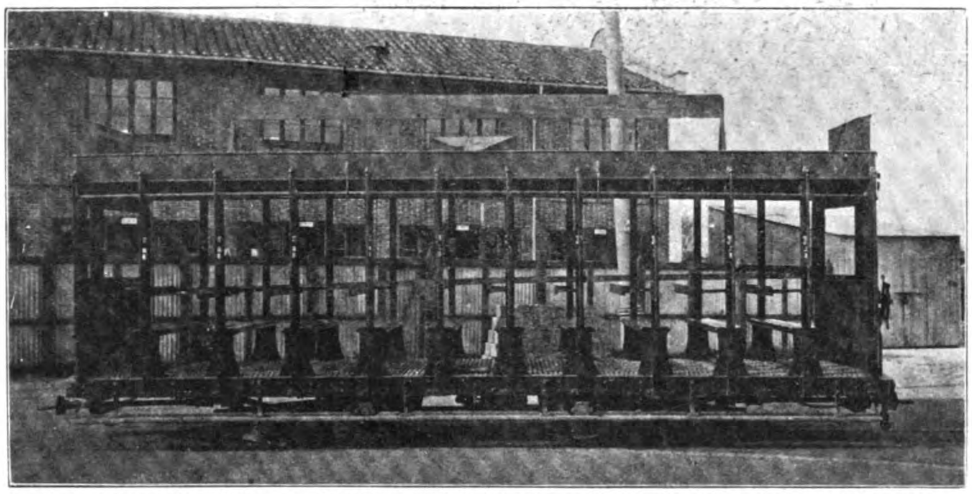
Complete Oil Mill machinery has been furnished the Shanghai Cong Chong Cotton Seed Oil Mill with a capacity of 1,500 piculs of seed in 24 hours. Complete oil and bean cake plants to the "Yu Shing Bean Oil Mill in Anhui, consisting of 60 presses, and 100 presses to the "Hai Foon" Bean Oil Mill at Haichow, besides several smaller plants. Rice cleaning and



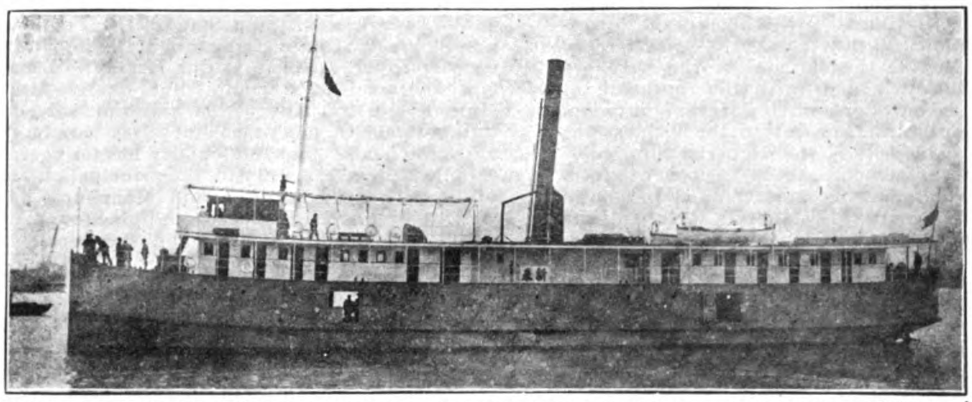
RAILROAD BRIDGE OF 60 FOOT SPAN CONSTRUCTED BY NICOLAS TSU FOR THE KIANG-SU RAILWAY CO.



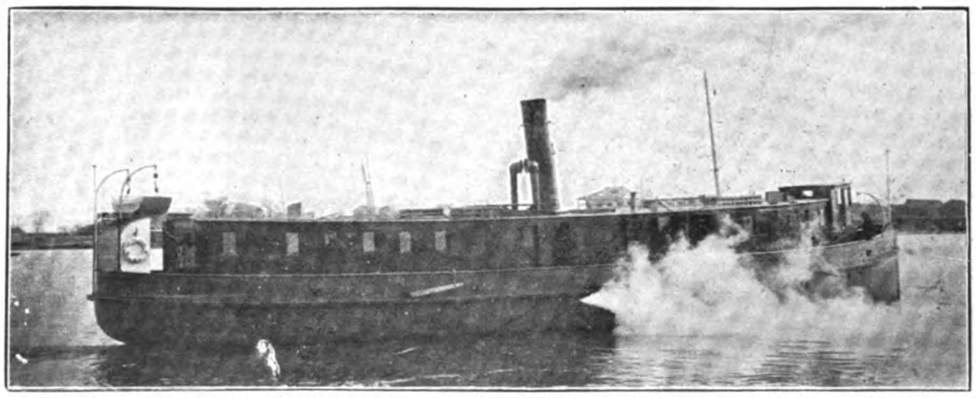
VIEW OF 12 PASENGER CARS IN COURSE OF CONSTRUCTION FOR THE CHEKIANG RAILWAY CO. (1ST, 2ND AND 3RD CLASS) AS CARS ON SHANGHAI-NANKING RY.



TRAILER CAR, TYPE C, BUILT BY THE NICOLAS TSU ENGINEERING WORKS FOR THE SHANGHAI TRAMWAYS



STEEL S. S. "HSINTAI," DISPLACEMENT 291 TONS, SPEED 11 KNOTS. DIMENSIONS 160′ × 21′ × 10′. DRAFT 8′ COMPOUND CONDENSING ENGINE 320 H. P. TO CARRY 300 PASSENGERS: BUILT BY THE NICOLAS TSU ENGINEERING WORKS



STEEL SHALLOW DRAFT PASSENGER BOAT "HENG HSIN" BUILT BY THE NICOLAS TSU ENGINEERING WORKS FOR THE CHINA MERCHANTS INLAND NAVIGATION CO.

hulling machines are made at the works, and with the small kerosene oil engines, make a compact plant, suitable for the small farmer. Machines with capacities from 60 to 600 piculs per 12 hours are made and marketed.

Engines and boilers from 40 to 350 H. P., and one complete set of Corliss 28″×52″ engines and 18″×52″ pumps with condenser and air pump were supplied to the Chinese Inland Water Works at Shanghai, having a capacity of 4,000,000 gallons in 24 hours. Minting machines for the new copper coins were supplied to the Kiangsu and Fengtien Provincial Mints.

The steel chimney for the Hupeh Cement Works, 200 ft. high and 11 ft. diameter, bell and whistling buoys for the Imperial Maritime Customs, letter boxes for the Postal Department, the Customs' jetty at Shanghai, the staircase for the Shanghai Club, and many other varieties of work have been executed.

The success of this firm has encouraged them to further expansion of the works, and in due course new high speed machine and special tools will be added.

A dry dock and steel casting plant is contemplated, which will not only enable them to compete with the other local concerns, but permit the production of finished and complete machines of all kinds entirely within the works.

WILKS & JACK, LTD.

This firm was founded at Hongkong in 1902 by Mr. E. C. Wilks, M. I. Mech. E., as a marine engineer's and surveyors' bureau. Mr. Wilks was joined in 1903 by Mr. W. C. Jack, M. I. N. A., formerly Ingénieur en Chef of the Tonkin River Mail Service, and afterwards assistant manager at the Kowloon establishment of the Hongkong and Whampoa Dock Company.

The firm has designed and superintended the construction of a large number of river steamers and launches. In December, 1906, the business was converted into a limited liability company, under the style of Wilks & Jack, Ltd., with the former proprietors as general managers.

The firm submits designs and estimates for steamships and launches for sea or river service, and make a speciality of craft of lighter draft. Vessels are inspected and trial trips run on behalf of prospective purchasers.

THE OSAKA IRON WORKS

This successful enterprise that has won a prominent place among the leading industrial enterprises of Osaka was inaugurated in 1880 by E. H. Hunter, Esq., a prominent importer and expoiter of Kobe who during many years of residence realized the necessity of shipbuilding yard and engineering, works for the repair of vessels, thus increasing the attractiveness of the port for the carrying trade. With five Japanese partners, he secured a site at a desirable point on the Ajikawa River, Osaka, and the construction of building was expedited. Machinery was installed and the works constructed at great outlay.

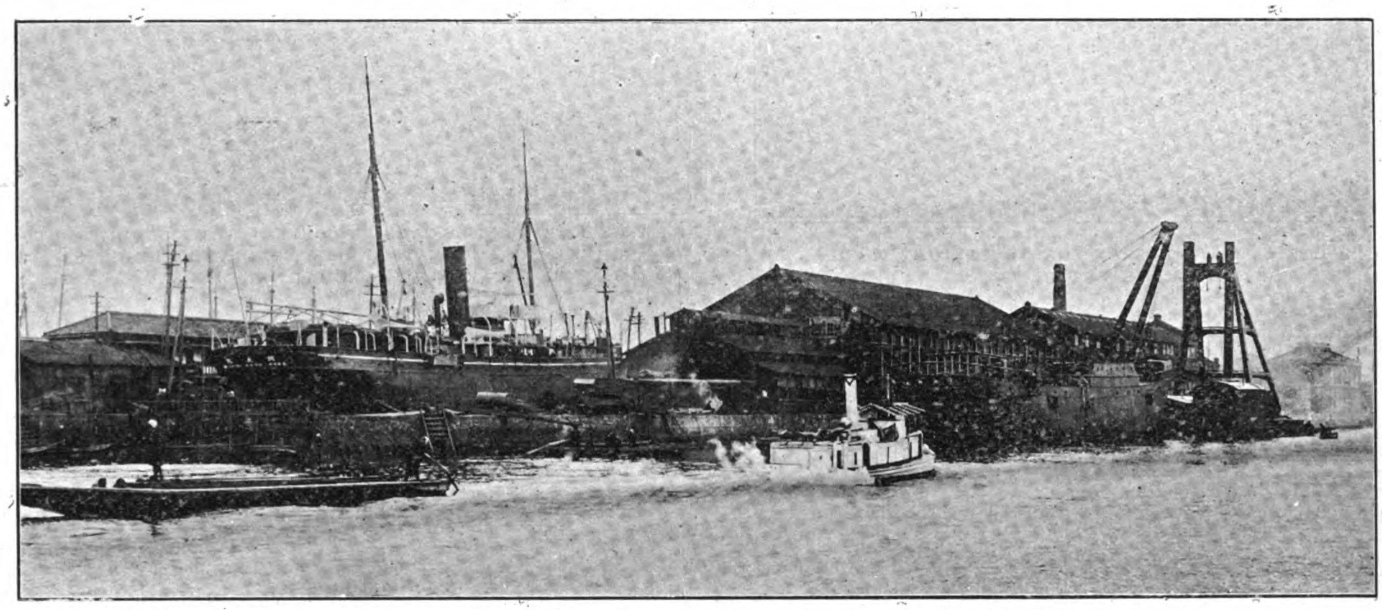
While Mr. Hunter continued sanguine of success, his Japanese partners lacked his courage and before the works were completed, they retired one by one until Mr. Hunter was left to bear the whole burden and responsibility for the success of the enterprise, financially and otherwise. He did not falter and his whole fortune was invested as an evidence of his faith in the venture. His tenacity of purpose, his resourcefulness, and his ability, won for him success in large measure.

Work began to pour in from the day the works were opened and in 1884 it became necessary to reconstruct the dock in order to repair the steamer Mikuni-Maru. The reconstructed dock was built of granite. The first boiler constructed in Japan is to the credit of these works.

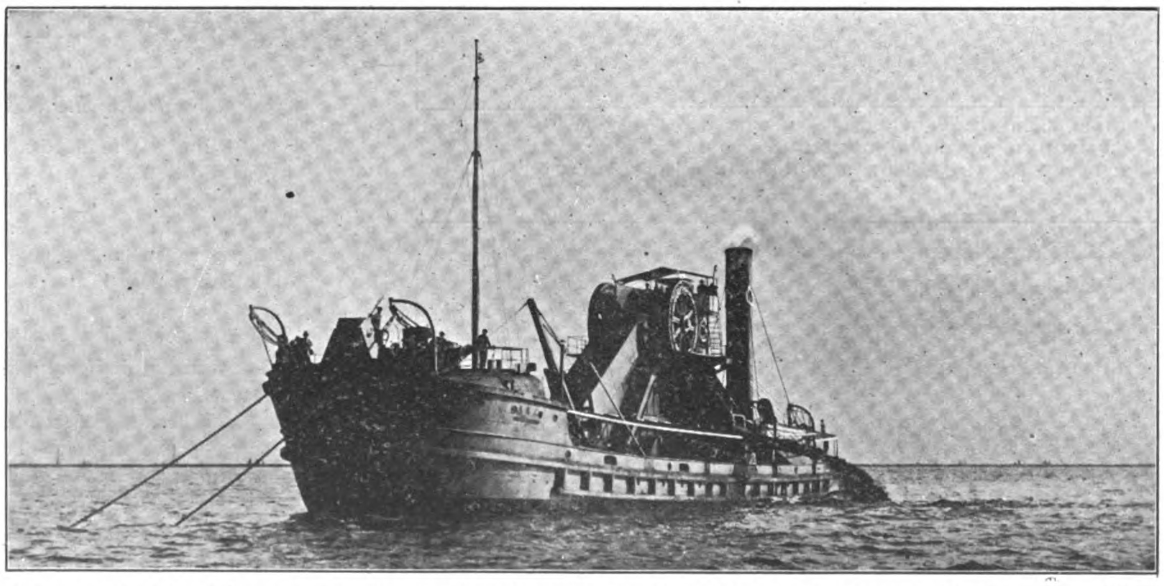
It soon became necessary to extend the works to meet the requirements of the increased volume of business. The result was the Kiyamachi plant on the south beach of the Ajikawa completed in 1889 for the construction of wooden vessels.

Then followed several years of depression but there was no lack of courage in tiding over the hard times. Mr. Akizuki, the Japanese manager during this period, was largely responsible for the success of the struggle which finally ended with the outbreak of the China-Japan war when government orders came pouring in. Then in 1900, the business was further advanced by the Imperial Shipbuilding Encouragement Act. To benefit from this legislation it became necessary to rebuild the entire works. Fortunately at this time Mr. Roytaro Hunter, the eldest son of Mr. E. H. Hunter who had been taking an eight years course abroad, had returned and assumed the management. He proceeded at once to refit the works. The original yard was turned into the present engine and boiler shops and a new site comprising twenty acres located at a point called Sakurajima, a mile from the old site near the mouth of the river inside the new harbor then under construction by the City Corporation. This new plant was equipped to construct steel vessels of all sizes and included other neeessary shops for repair and engineering construction.

At this time the principal cities of Japan began installing modern water systems and Manager Hunter with his usual foresight decided to inaugurate a pipe foundry to meet this new demand. The early history of the foundry was far from satisfactory, due largely to lack of experienced direction. But finally Mr. Hunter and Mr. Kouga, his assistant, solved the problem of making first class product with the result that the foundry has for years supplied pipe, not only to the principal cities of Japan but to Formosa and Manchuria as well. This was the first successful pipe foundry established in the Empire and stands as a



THE OSAKA IRON WORKS: HEAD OFFICE AND WORKS AT AJIKAWA, OSAKA, JAPAN



800 TON SELF-PROPELLING BUCKET DREDGER "SOTO MARU," BUILT BY THE OSAKA IRON WORKS FOR THE SOUTH MANCHURIAN RAILWAY COMPANY IN 1910.—DREDGING CAPACITY 800 TONS PER HOUR, DREDGING DEPTH 45 FEET, SPEED 8 KNOTS

monument to the enterprise and courage of the management of the Osaka Iron Works.

In 1905 the Temposan yard originally used for the repair of vessels on the harbor works was acquired from the City Corporation. This addition included two docks and is situated just opposite the Sakurajima Yards. They were completely remodelled and refitted and are utilized exclusively for repair work on vessels.

The Osaka Iron Works now occupy an area of 33 acres with immense water frontage and includes docks and shops for the manufacture and repair of all sizes of engines, boilers, steel and wooden ships, and cast iron pipes of all kinds. The Works also own a branch yard at Keelung, Formosa, with a dock capable of receiving vessels of 1,000 tons and is equipped for general engineering work, large contracts being undertaken for the Formosan government and private interests.

In addition to the present works at Osaka, plans for a new dock 500 feet in length have been completed and it is expected that the new extension will be in operation in 1911 when the river in Osaka will be dredged to an average depth of 25 feet.

The works now employ 3,500 skilled mechanics in the different departments.

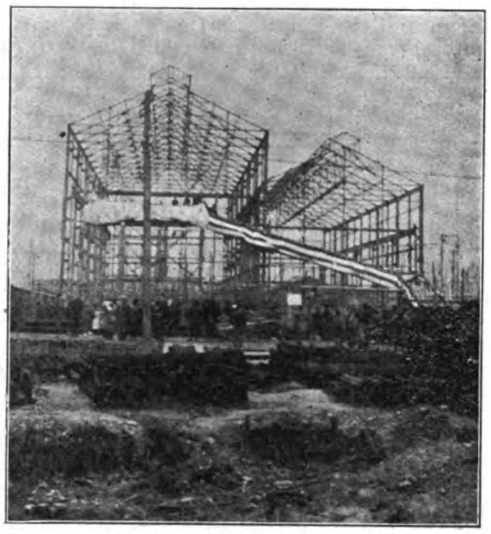
The development of these works is typical of the remarkable history of the shipbuilding industry of Japan. During the war with China these works accomplished much in facilitating Government orders for repairs and for furnishing war materials, and during the war with Russia, the Works were so extended that they were utilized in refitting several warships with expedition besides building two new torpedo destroyers for the Imperial Navy.

In recognition of the splendid service rendered the Japanese Government, His Imperial Majesty conferred the Fifth Grade of the Order of Merit on Mr. Tyotaro Hunter and the Sixth Order was conferred on Mr. Kouga, Mr. Miyeshi and Mr. Shirato of his staff as well as recognition for others connected with the management during the war

The officers of the works follow:

President and Proprietor, Ryotaro Hunter, Esq.; General Manager, Ukichi Kouga, Esq.; Manager, Mitsuisabuso Miyoshi, Esq.; Naval Architect, Bunichiro Fukuchi, Esq.; Chief Engineer, Sakutaro Takakura, Esq.

The head offices of the company are at Ajikawa-dori, Osaka.



OSAKA IRON WORKS, NEW FOUNDRY UNDER CONSTRUCTION 150×90 FEET. FITTED WITH TWO 30 TON AND TWO TEN TON ELECTRIC OVERHEAD TRAVELING CRANES AND COMPLETE EQUIPMENT

HAKODATE DOCK COMPANY, LTD.

This dock located at Hakodate, on the Island of Hokkaido, is the most northern of the Japanese Companies. The works were first started with a patent marine slipway having rails 520 feet long, and capable of lifting vessels up to 1,200 tons gross. The increased shipping interests of this section demanded greater facilities, and a new granite drydock was constructed of the following dimensions:

Extreme length, 531 feet; length inside caisson, 503′ 9″; length on blocks, 461 ft.; width at entrance, 81′ 8″ top, 71′ 9″ bottom.

The difference between high water at ordinary spring tides and at ordinary neaps is 2 ft. 8 in. The present channel of 20 ft. at low water leading to the dock is to be dredged to 25 ft. In addition there is a Berry's improved slipway capable of lifting a ship of 1,200 tons gross. These works are well equipped with up to date tools having a 2-ton steam hammer capable of forging 12-inch shafts. The foundry can handle castings up to tons. This is not a shipbuilding company, being confined to marine repairs, but many smaller harbor vessels and sailing craft, lighters, etc., have been turned out.

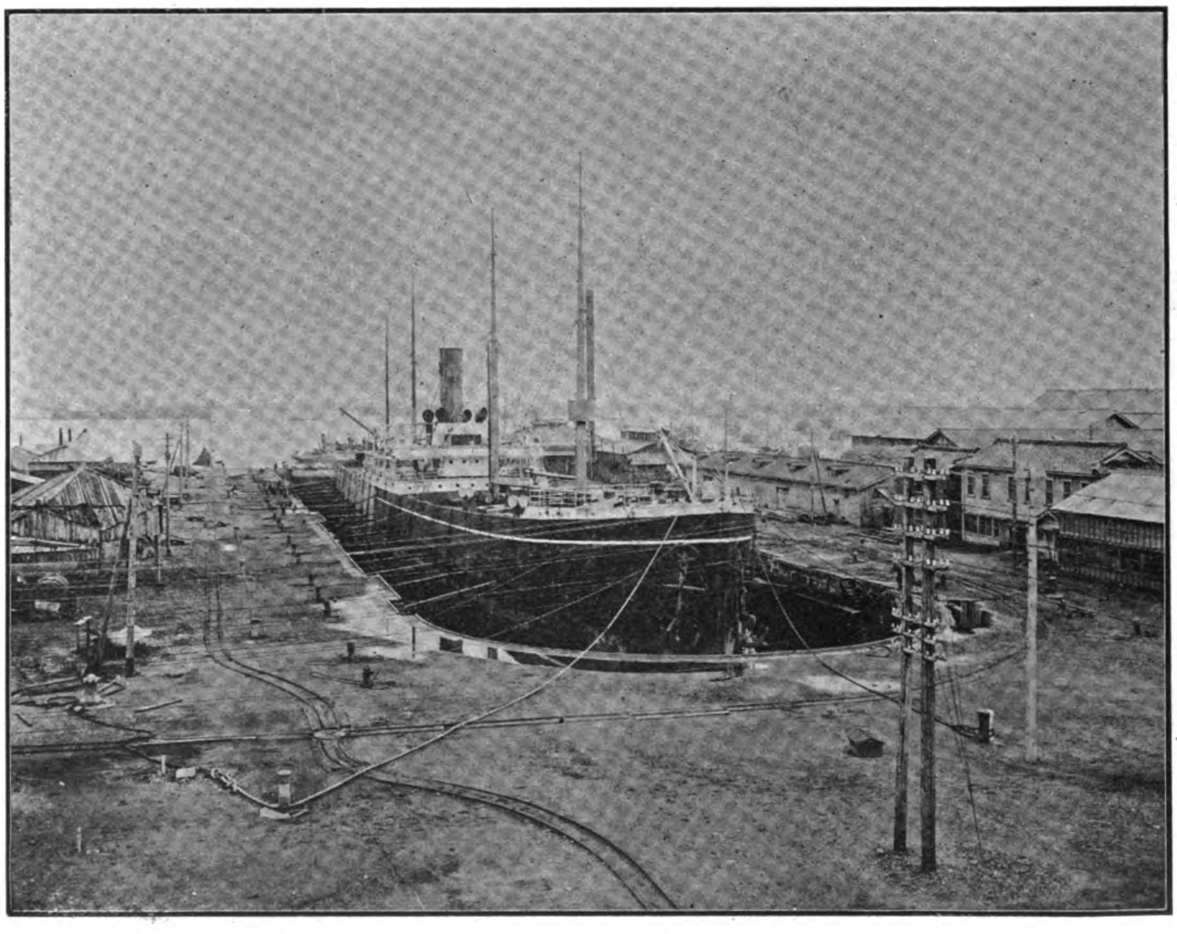
The company has a capital of Yen 1,800,000 of which Yen 1,200,000 is preferred and Yen 600,000 common stock.

THE TOKYO ISHIKAWAJIMA SHIPBUILDING YARD, LTD.

Main Office: Tsukuda, Tokyo. Officers and Directors: Managing Director, S. Umeura; Directors, T. Shimidzu, K. Sato, S. Tanaka. Auditors, E. Tanaka; M. Sato; S. Tomioka; Manager and Chief Engineer, T. Uchida; capital, Yen 1,020,000.

Description of Docks.—Length on bottom, No. 1, 299′; length on bottom, No. 2, 270′; width at entrance, No. 1, 41′ 9″; width at entrance, No. 2, 32′ 9″; depth on sill, No. 1, 14′ 9″; docks can take vessels of about 1,000 tons gross.

Besides shipbuilding this concern has a large and increasing trade, outside of the regular marine line of work. It has never constructed any large vessels but has launched some 300 small craft mostly of wood. At present the works comprise 12 shops fitted with the most modern appliances, especially adapted for structural steel work. In this branch the Company has taken the lead, having erected most of the truss bridges in Tokio, and some of the larger railway bridges in other parts of the Empire. The largest steel building in Japan called the National Wrestling Hall, was designed, constructed and erected by this company. Electric generators, pumps, engines and other machinery is manufactured.



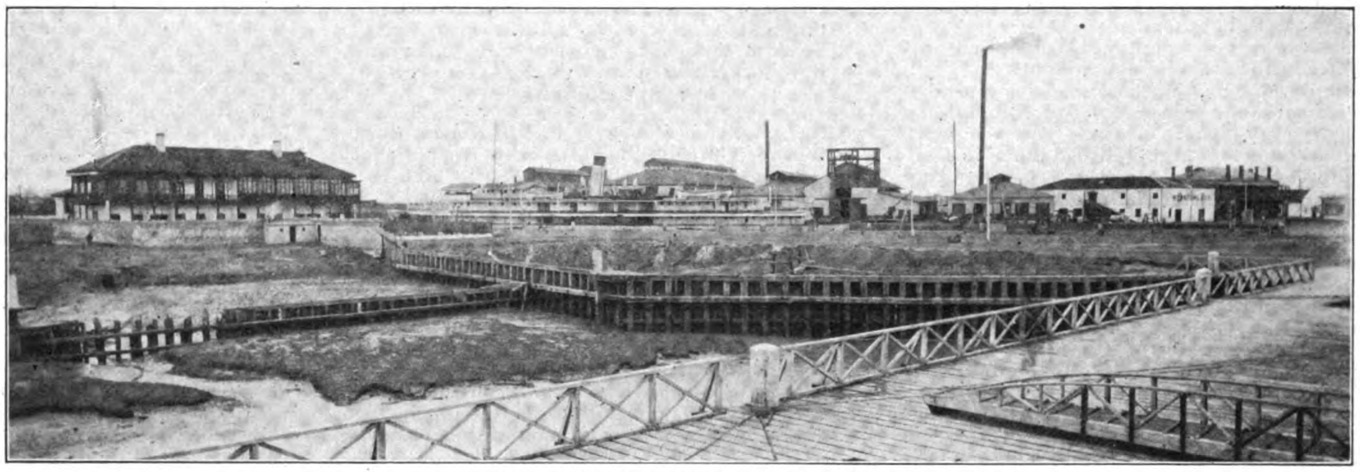
GENERAL VIEW OF THE HAKODATE DOCKYARD

THE SHANGHAI DOCK & ENGINEERING CO., LTD.

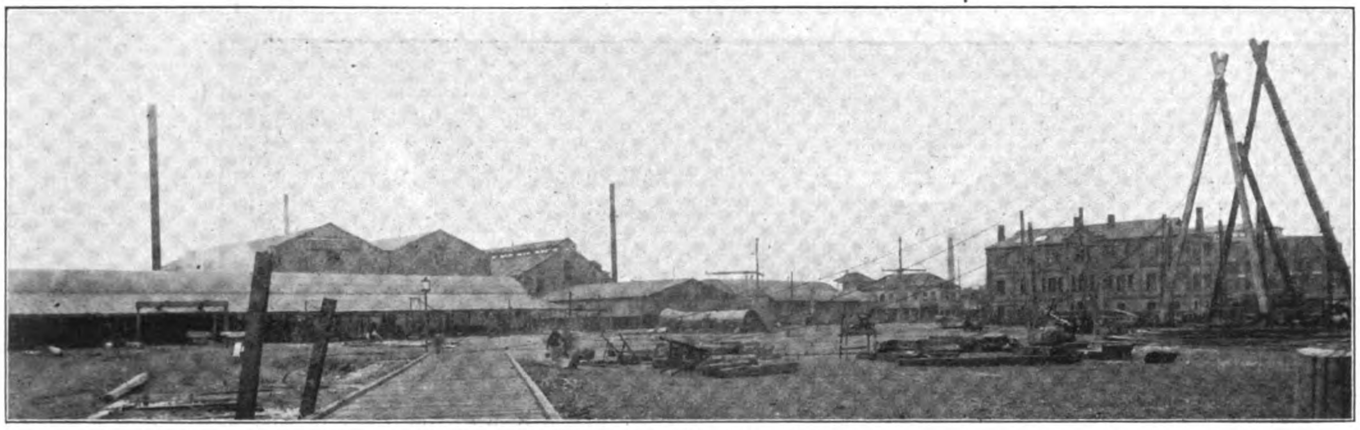
The Shanghai Dock & Engineering Co., Ltd., is a combination of the two principal shipbuilding and engineering companies in Shanghai. Founded almost simultaneously, in the early days of foreigners in China, they amalgamated in 1900, and now form the largest shipbuilding concern on the China Coast, with a capital of over Five Million Taels (roughly £700,000). The Head Office is at the Old Dock, Broadway, Hongkew, opposite the Central or Pootung Works

The area of the property is 96 English acres,

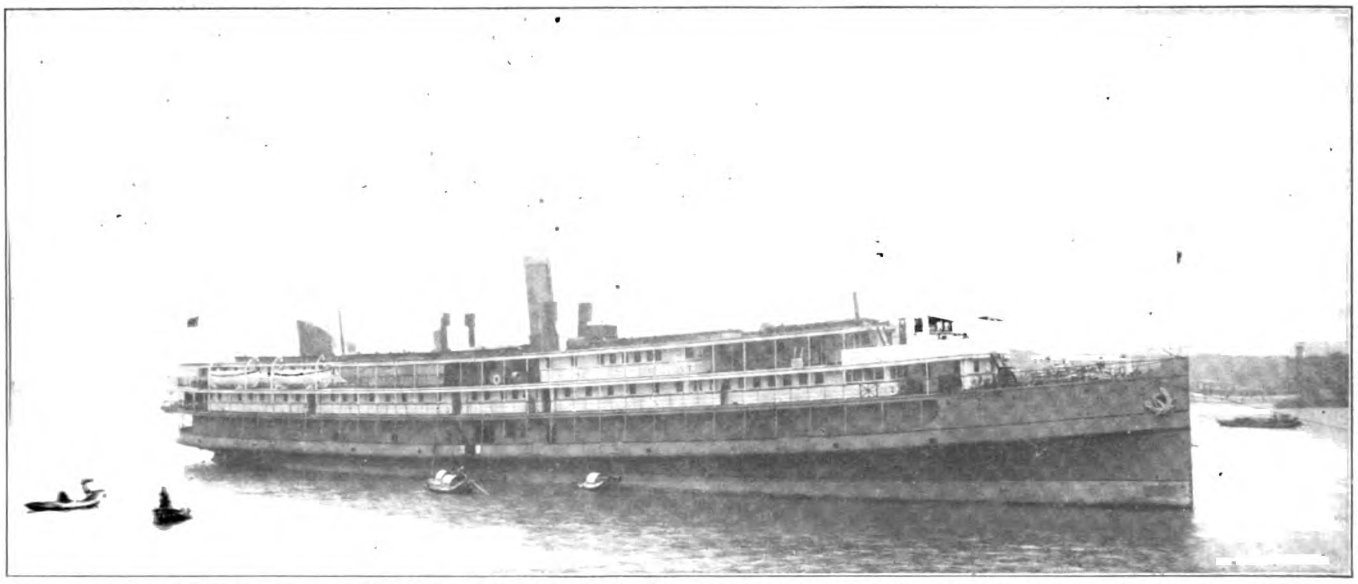
COSMOPOLITAN DOCK AND SHOPS



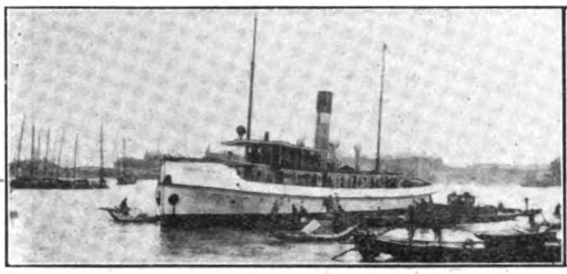
INTERNATIONAL DOCK AND WORKS



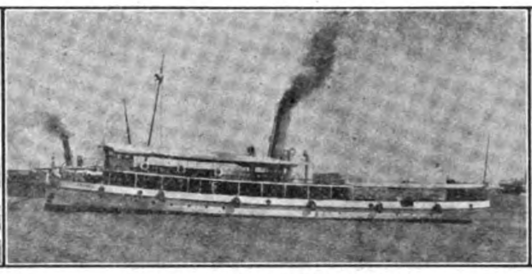
POOTUNG SHIPBUILDING YARD



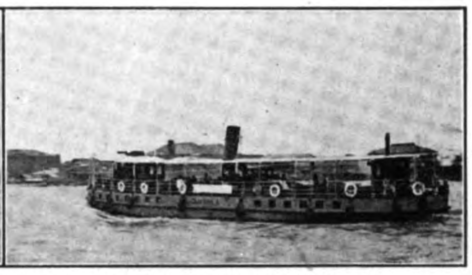
CHINA MERCHANTS STEAM NAVIGATION CO.'S T. S. S. "KIANG HSIN," BUILT AND ENGINED BY THE SHANGHAI DOCK & ENGINEERING CO., LTD. GROSS TONNAGE 3372; I. H. P. 3000



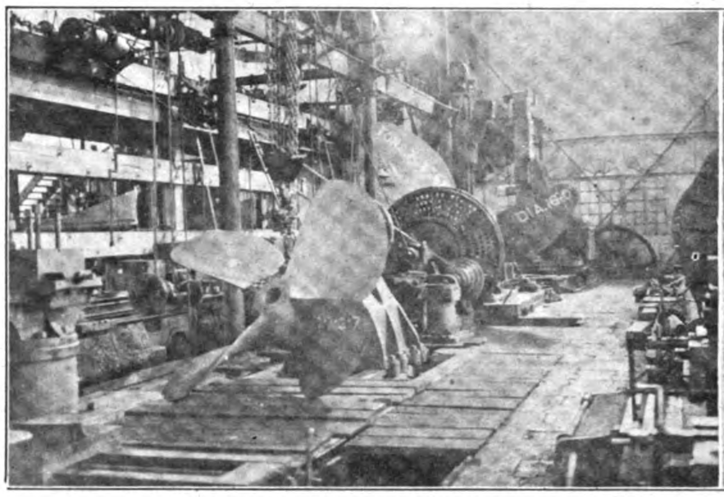
TUG "GENERAL WEEKS" FOR U. S. ARMY
TONNAGE 416; I. H. P. 1232



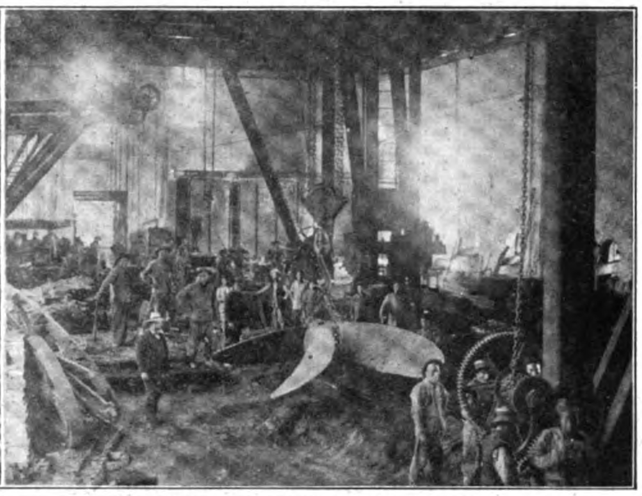
N. D. L. TENDER "BREMEN"
146′×25′×12′ M. L. D.



FERRY BOAT "CLUTHAX"
90′×18′×9′ M. L. D.

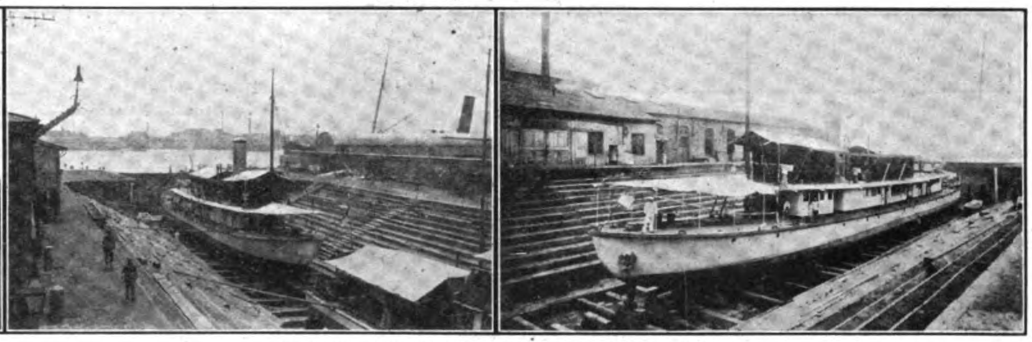


ONE OF THE MACHINE SHOPS

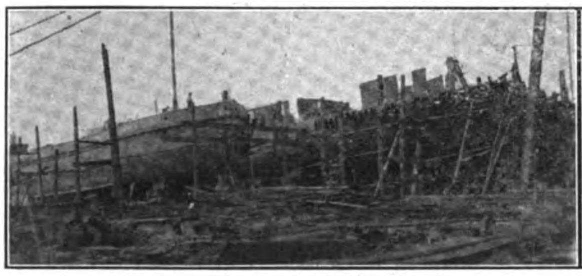


ONE OF THE MOULDING SHOPS

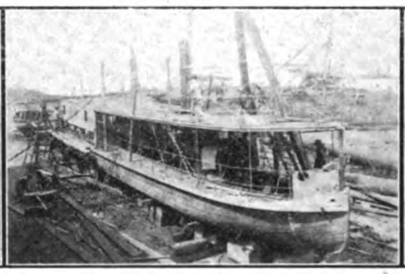
GERMAN GUNBOAT "OTTER"
IN INTERNATIONAL DOCK



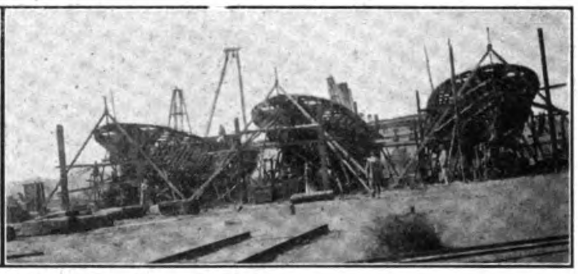
FRENCH GUNBOAT "DOUDART DE LAGREE"
IN OLD DOCK



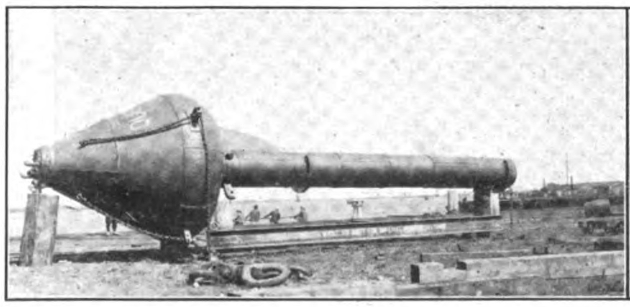
LAUNCHES UNDER CONSTRUCTION FOR MANILA



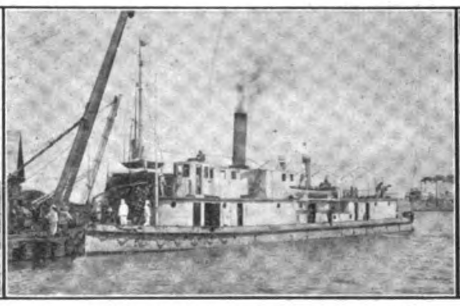
LIGHT DRAFT STEAMER "PATROL,"
BUILT AT POOTUNG



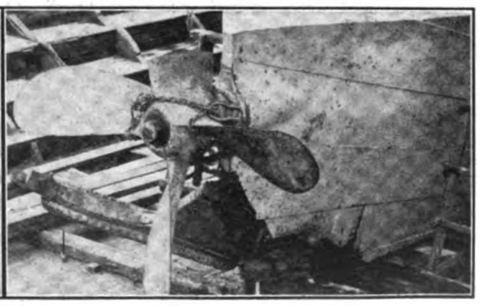
LAUNCHES FOR MANILA



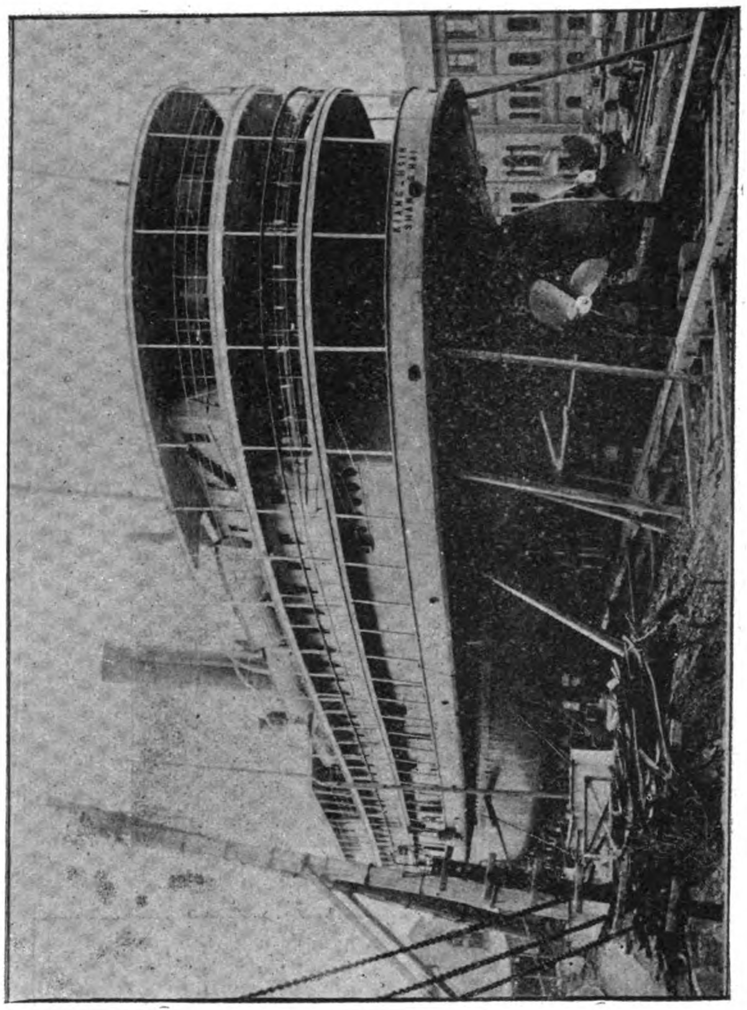
WHISTLING BUOY FOR THE IMPERIAL
MARITIME CUSTOMS



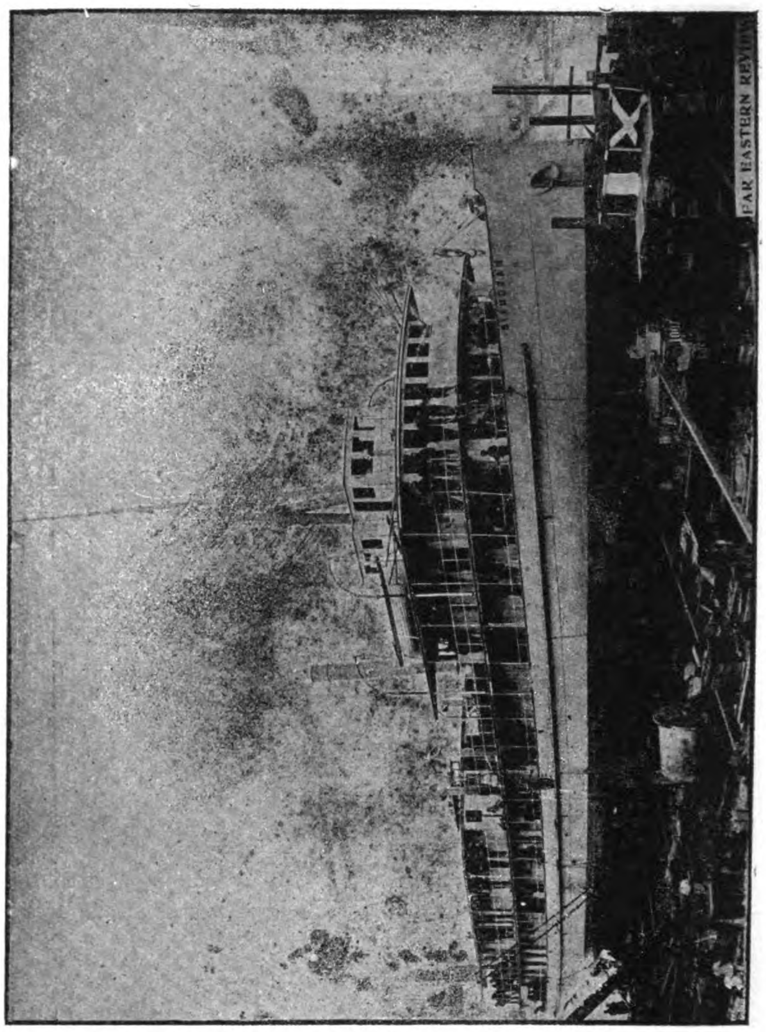
FRENCH RIVER GUNBOAT "OLRY"
115′×22′×6′ 6″ M. L. D.
BUILT BY THE S. D. & E. CO., LTD.



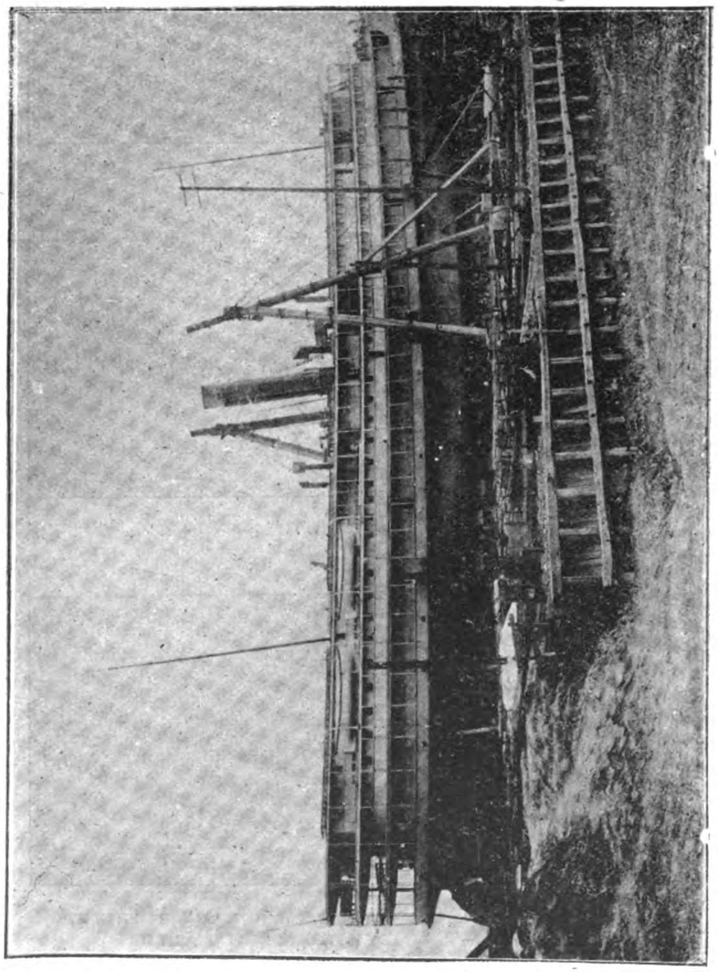
STERN OF S. S. "TOO NAN" REPAIRED
BY S. D. & E. CO., LTD.



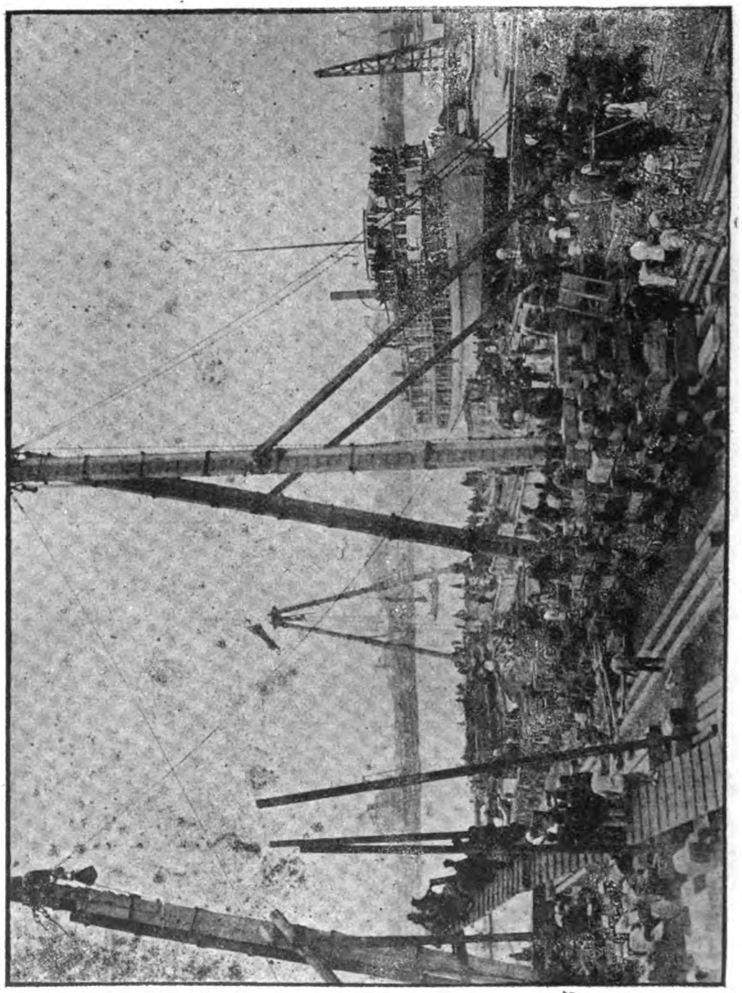
STERN VIEW OF "KIANG HSIN" SHOWING TWIN PROPELLERS



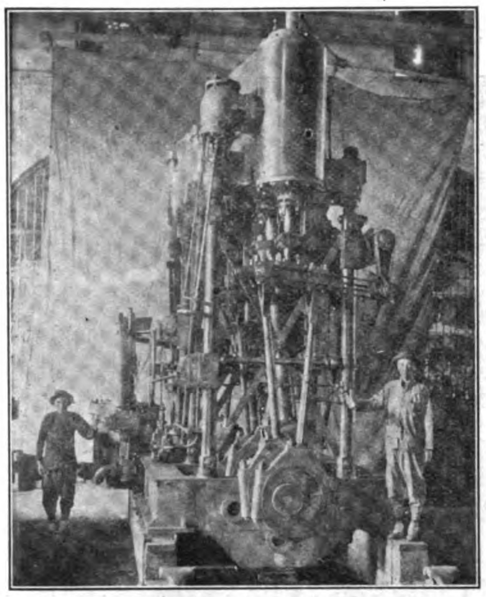
STEAMER "SIANGTAN" IN THE STOCKS



BEAM VIEW OF THE "KIANG HSIN" ON THE STOCKS



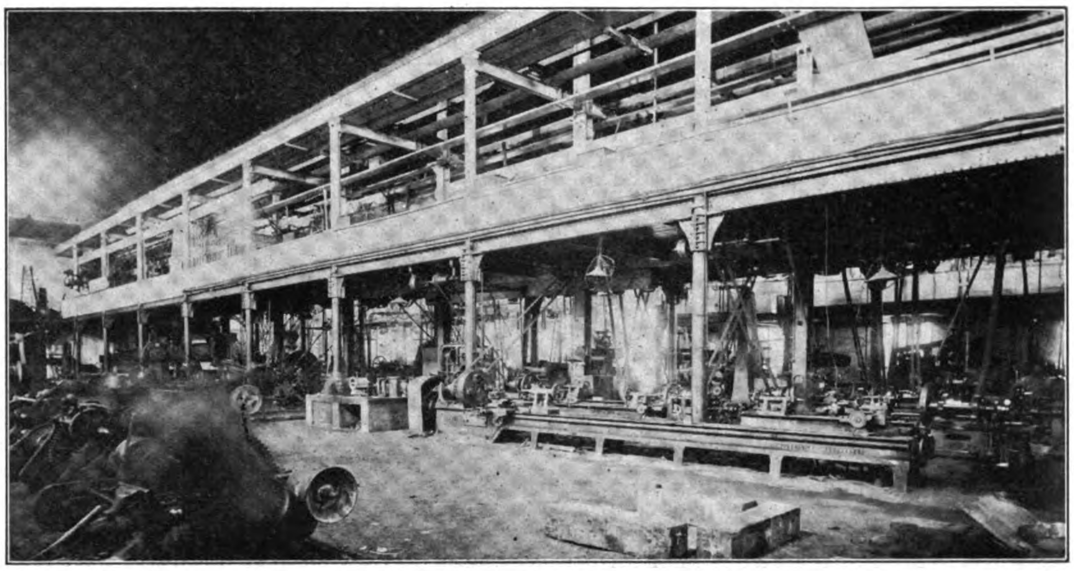
LAUNCHING OF THE STEAMER "SIANGTAN"



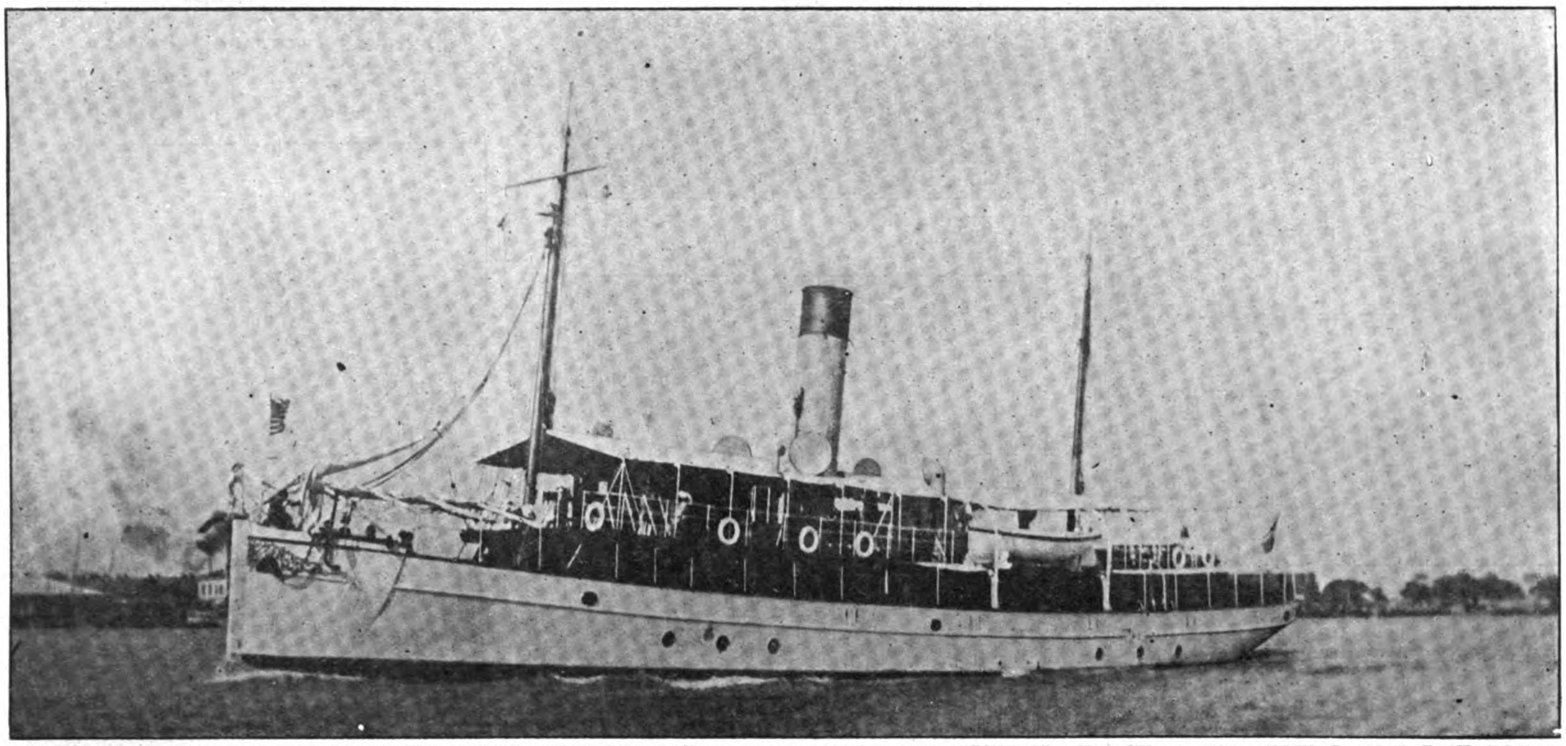
ENGINES FOR THE CHINA MERCHANTS' S. N. CO.'S T. S. S. "KIANG HSIN." TRIPLE EXPANSION, SURFACE CONDENSING ENGINES

$\frac{19'' - 31\frac{1}{2}'' - 52''}{33''}$ W. P. 160 LBS.

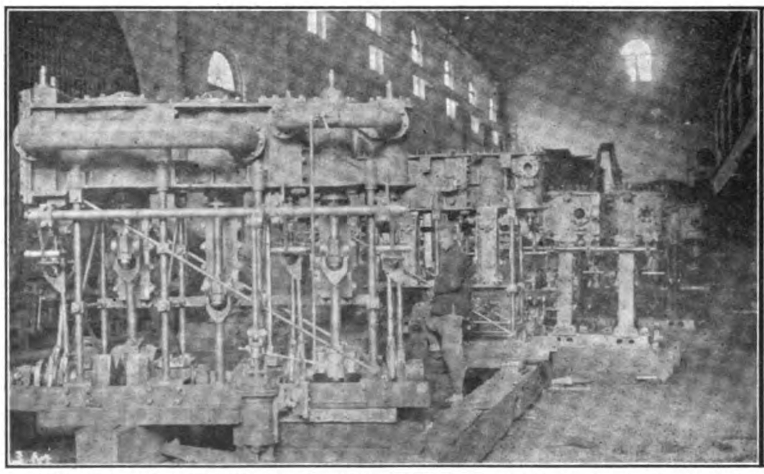
TOTAL I. H. P. 3000



PART OF MACHINE SHOPS AT THE POOTUNG WORKS



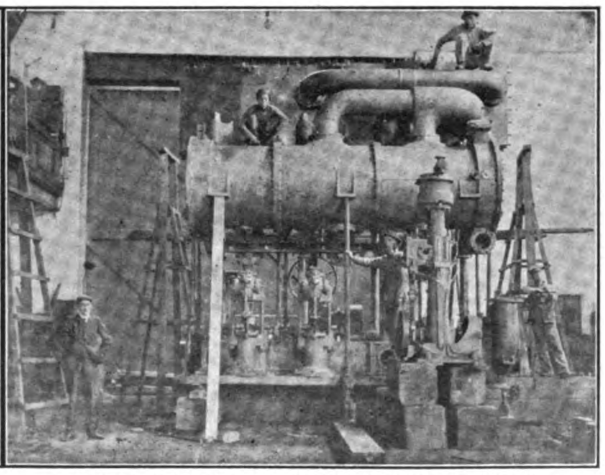
COMPOSITE COAST GUARD AND REVENUE CRUISERS FOR THE GOVERNMENT OF THE PHILIPPINE ISLANDS BUILT AND ENGINED BY THE SHANGHAI DOCK AND ENGINEERING CO. LTD.; LENGTH OVERALL--148; LENGTH B. P.--140; BREADTH--25; DEPTH--11'9"; SIZE OF ENGINES: H. P. CYLINDER--18"; L. P. CYLINDER--36"; STROKE--24"; I. H. P. 600. S. S. BALALAC, BASILAN, BUSUANGA, CORREGIDOR, LEYTE, LUZON, MASBATE, MINDANAO, MINDORO, NEGROS, PALAWAN, PANAY, POLILLO, SAMAR, TABLAS.



ENGINES OF THE CHINA MERCHANTS' S. N. CO'S T. S. S. "KIANG." TRIPLE EXPANSION, SURFACE CONDENSING

$\frac{9'' - 14'' - 23''}{15''}$ W. P. 175 LBS

TOTAL I. H. P. 850



ENGINES OF THE S. S. "HSIN KONG." TRIPLE EXPANSION, SURFACE CONDENSING,

$\frac{19\frac{1}{2}'' - 31\frac{3}{4}'' - 52''}{36''}$ W. P. 160 LBS

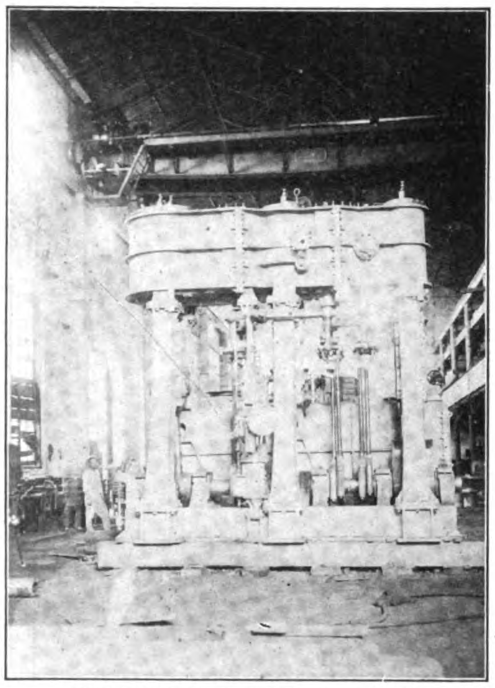
TOTAL I. H. P. 1300

with a river frontage of about 1½ miles in length. Wharves and pontoons are so arranged that vessels can moor alongside during repairs or in the stream at head and stern moorings.

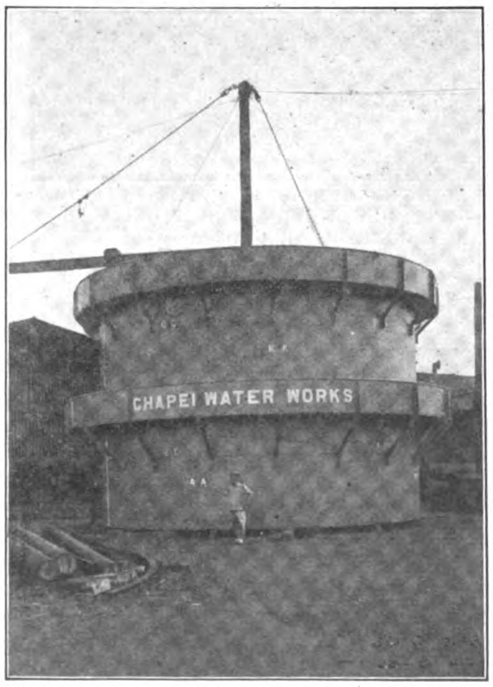
The Company owns the five dry docks here mentioned:

Names.	Length on Blocks	Breadth of Entrance	Depth on Sill at High Water
Cosmopolitan Dock........	532 ft.	77 ft.	24 ft.
International Dock........	528 ft.	77 ft.	23 ft.
New Dock...............	450 ft.	74 ft.	21 ft.
Old Dock.................	399 ft.	53 ft.	16 ft.
Tunkadoo Dock...........	355 ft.	67 ft.	16 ft.

Two of these docks, which are placed at convenient angles to the river, are among the largest in the East, and capable of docking vessels up to 530 ft. in length; the conjoined water frontage is 4,465 feet, with deep water



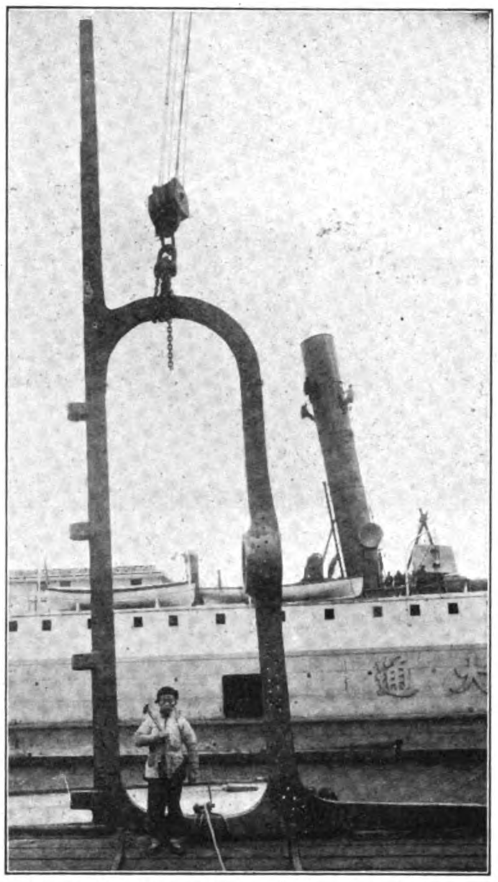
ENGINES OF S. S. "WAN CHUN"



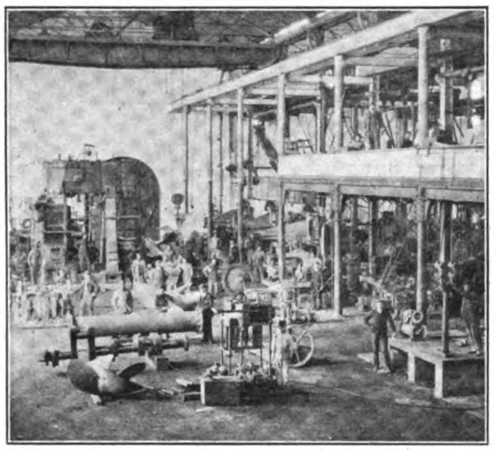
SETTLING TANK FOR CHAPEI WATERWORKS 30′ DIAMETER × 22′ HIGH

the whole length. Large buildings afford ample room for housing crews, and storing material.

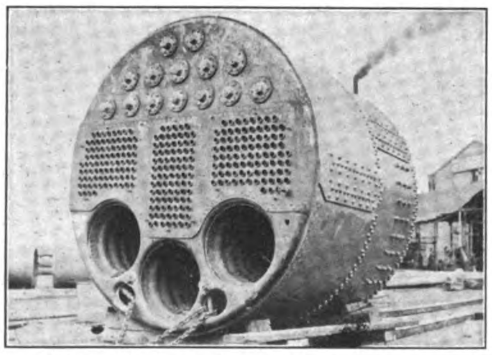
Shear Legs capable of lifting up to 65 tons



STERN FRAME FOR C. M. S. N. CO.'S S. S. "TOO NAN"



CORNER OF ONE OF THE MACHINE SHOPS OF THE SHANGHAI DOCK & ENG. CO., LTD.

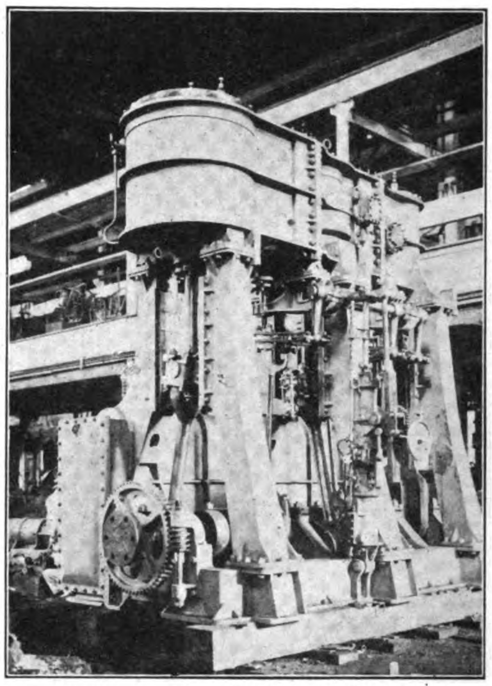


BOILER FOR T. S. S. "BREMEN" DIAM. 12′ 3″ × LENGTH 11′ W. P. 190 LBS.

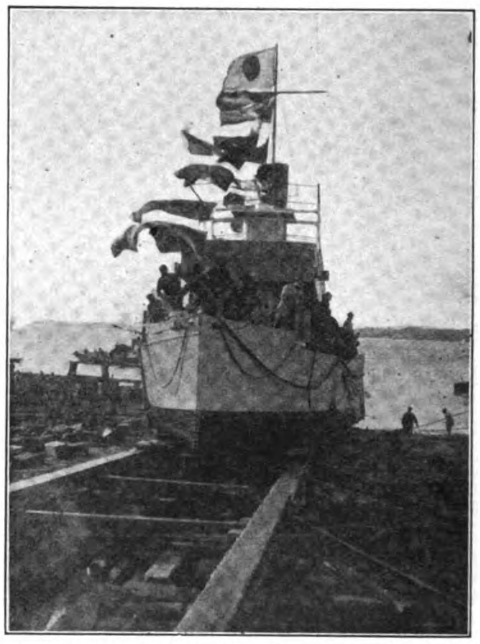
are placed at the various Docks and are available on short notice.

The shipbuilding yards face the river, and berths for building steamers of all sizes are laid out, together with slips for hauling up smaller craft.

There are extensive workshops, with all the latest improved tools, hydraulic and pneu-



ENGINES OF S. S. "WAN CHUN." TRIPLE EXPANSION SURFACE CONDENSING $\frac{16''-26''-43''}{30''}$ W. P. 180 LBS. TOTAL I. H. P., 900



H. I. J. M. "SUMIDA" BEFORE LAUNCHING

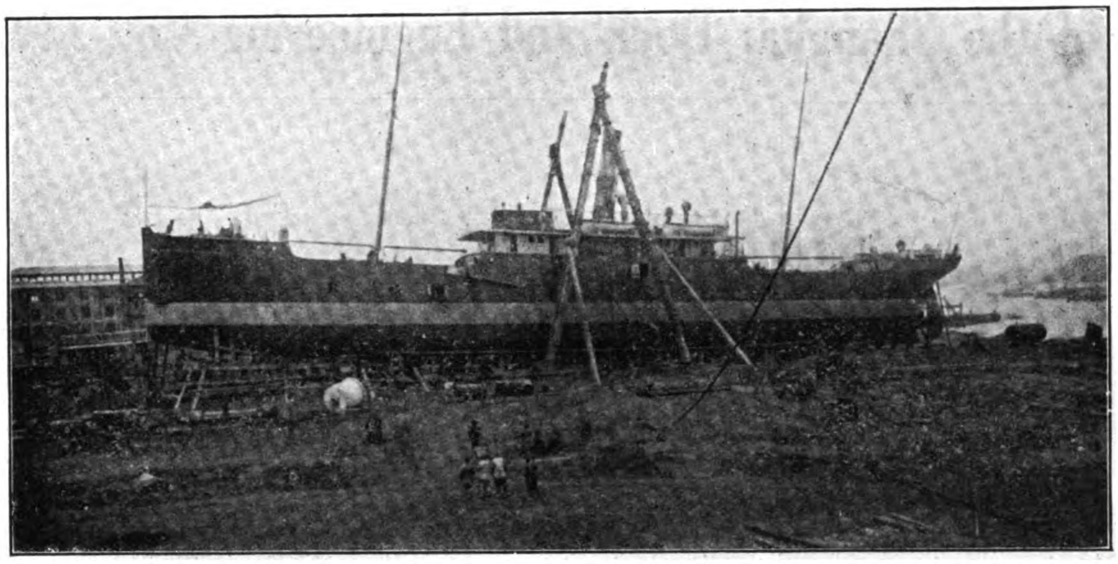
matic machinery, and travelling cranes of 60 tons' capacity.

Powerful salvage appliances are always ready for any emergency.

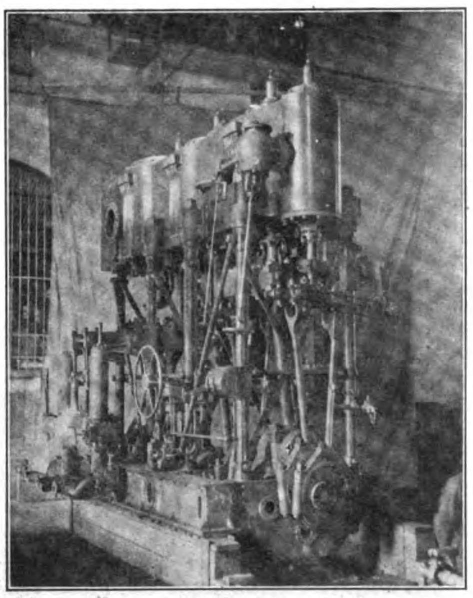
The docks and shops are lighted by electricity to facilitate night work and steamers under repair can have electric light supplied. Light railways for the quick handling of machinery run through the workshops and yards.

A large and experienced European staff of draughtsmen, shipbuilders, engineers, boilermakers, etc., provide adequately for the efficient carrying out of all work entrusted to the Company, and when required, afford every assistance to prospective clients, in designing or selecting the particular article most adapted to their requirements.

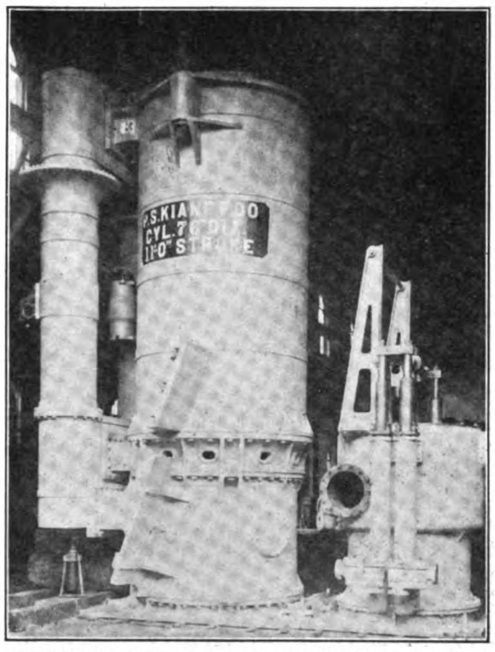
The central works on the Pootung side of the Whangpoo River cover an area of 16 acres, having about 700 feet of water frontage, and the usual workshops of an up to date concern. A marine railway for hauling small craft up to 300 tons deadweight and a railway for conveying heavy weights from wharf to shops or elsewhere about the yard, together with shear legs of 35 tons capacity are also available



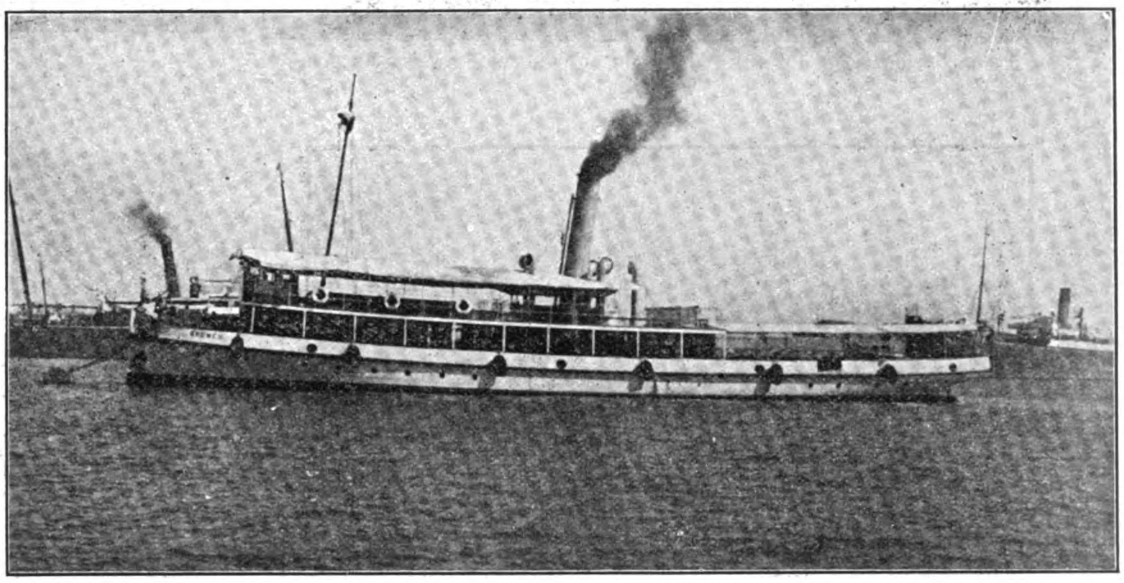
CHINA MERCHANTS' S. N. CO.'S STEEL SCREW STEAMER "HSINKONG"



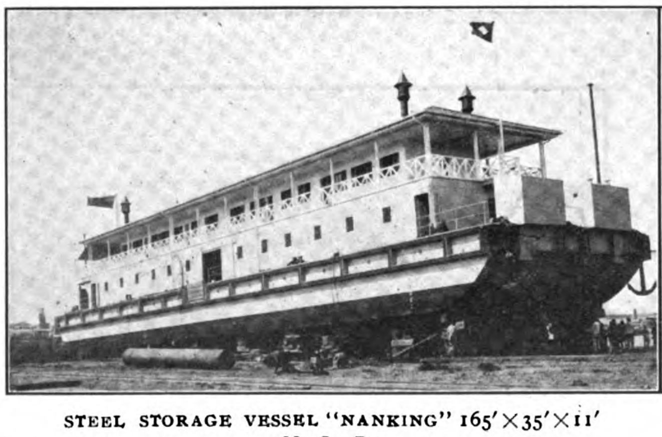
ENGINES OF S. S. "KIANG HSIN" I. H. P. 3000



CYLINDER FOR S. S. "KIANG FOO." HEAVIEST CASTING MADE IN SHANGHAI, WEIGHING 13 TONS 15 CWTS.



NORDDEUTSCHER LLOYD TENDER "BREMEN" BUILT BY THE SHANGHAI DOCK AND ENGINEERING COMPANY



STEEL STORAGE VESSEL "NANKING" 165'×35'×11' M. L. D.

CHINA MERCHANTS' S. N. CO.'S. S. S. "HSIN KONG" 270'×40'×21'6"—GROSS TONNAGE 2146; I. H. P. 1281

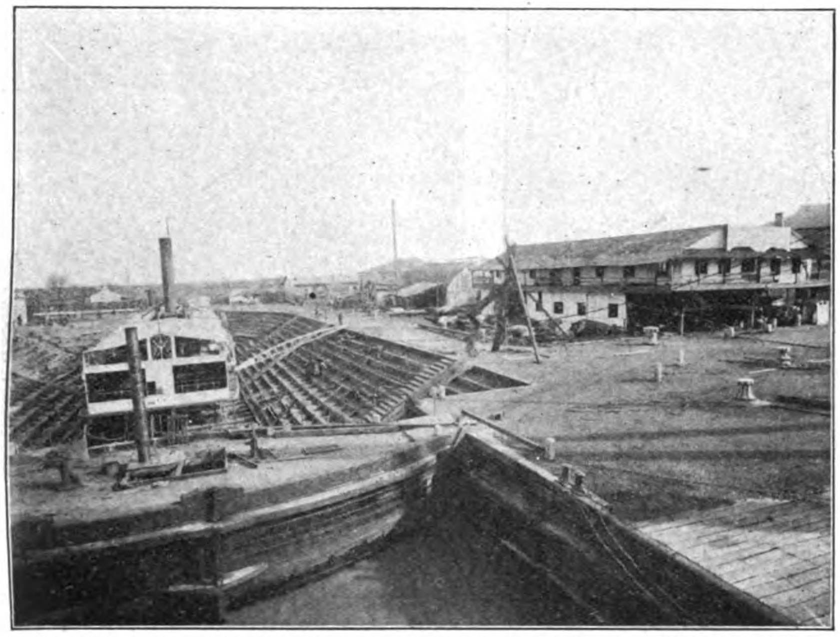
The godowns contain stores for building and fully equipping vessels of every class and size, and expeditiously completing repairs of every description, and are all conveniently adjacent. Offices, docks and workshops are in direct telephonic communication with each other.

The electrical department undertakes the installing and wiring of light and power plants, building small dynamos, rewiring old ones, and electrical repairs generally.

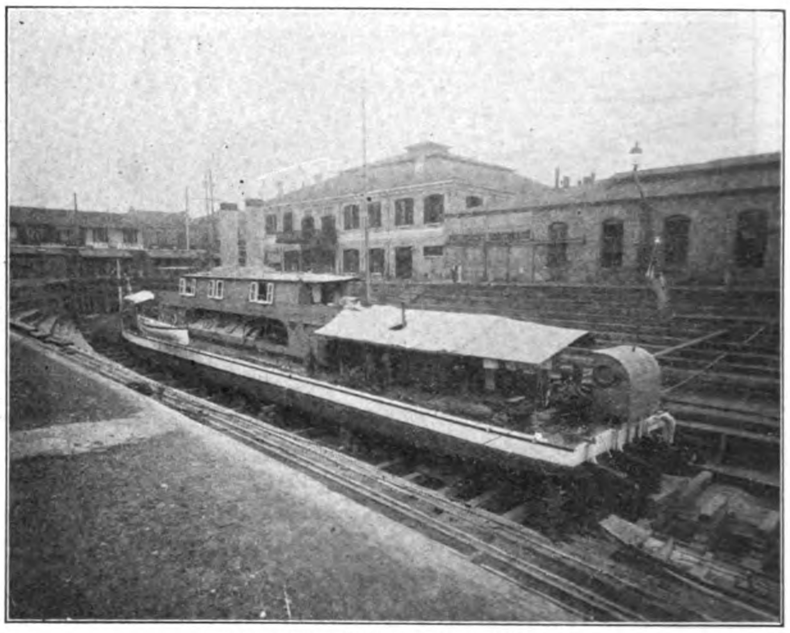
The Company does not confine its operations to marine engineering, but is also largely employed in structural steel and bridge work, hydraulic machinery and pumping plants, electric lighting and steam and hot water heating installations.

Every department is under skilled European superintendence, a steam ferry running at regular intervals maintains communication between the various docks and works, and a fleet of launches enable foremen to continually visit and supervise the work proceeding afloat

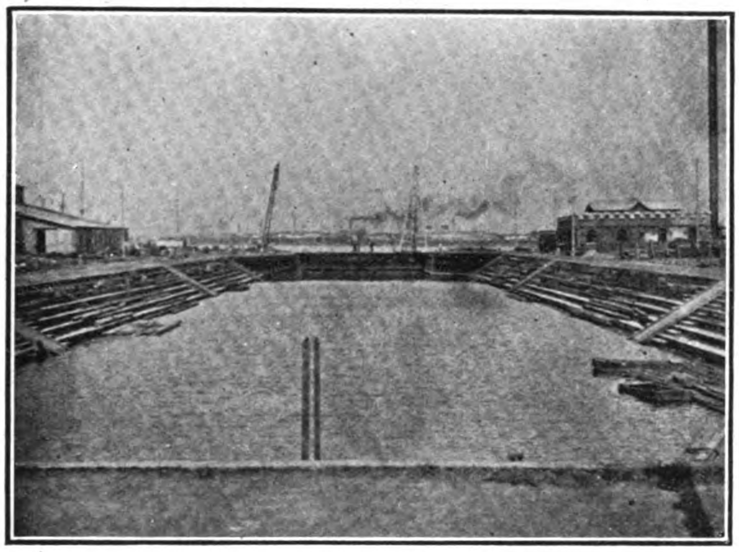
Views of the Works of the Shanghai Dock and Engineering Co., Ltd.



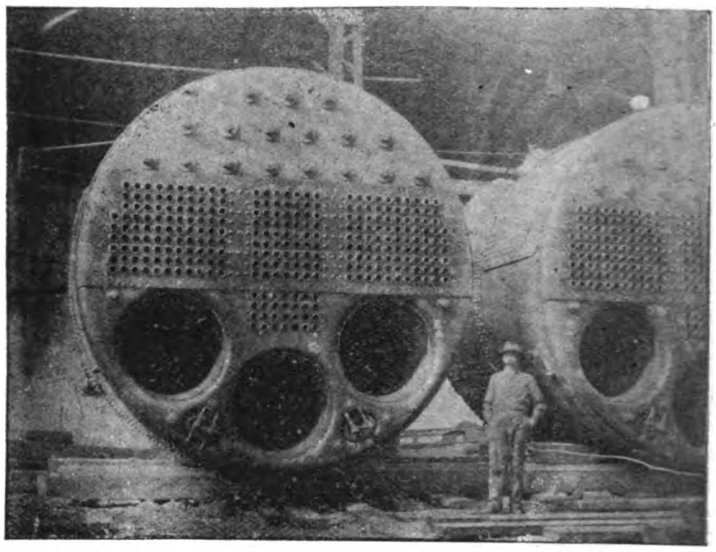
TUNKADOO DOCK: STERN WHEEL STEAMER "CHANG WO" UNDER REPAIRS



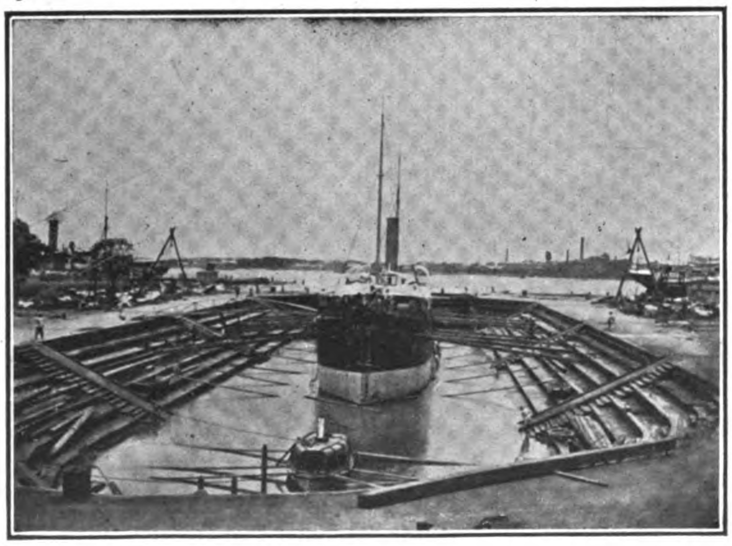
VIEW OF A VESSEL IN THE DOCK



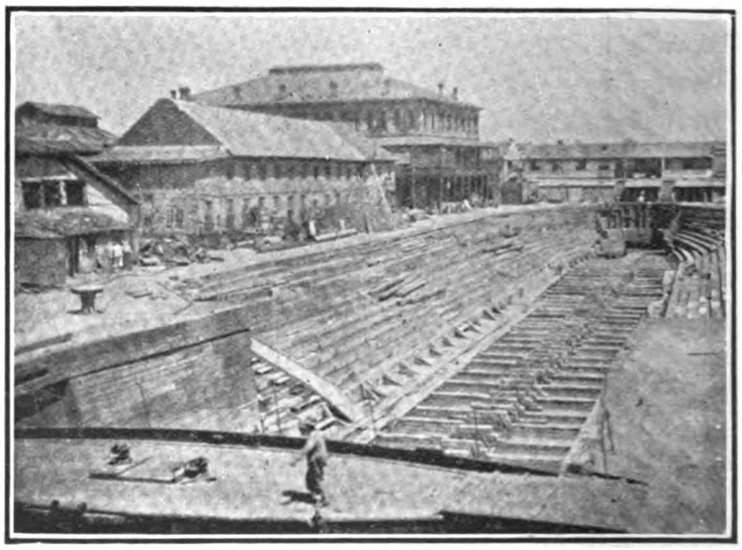
COSMOPOLITAN DOCK



"KIANG HSIN'S RETURN-TUBE BOILERS



NEW DOCK



OLD DOCK

VULCAN IRON WORKS, LTD., SHANGHAI

The engineering and shipbuilding business carried on by the Vulcan Ironworks, Ltd., was founded in 1905. The yard and works are conveniently situated at Yangtszepoo, on the north bank of the Whangpoo, and can be approached by river and road. The property embraces an area of rather more than 37 mow of land—a little over six acres—and has a river frontage of 360 feet. About half this area is covered by offices, workshops, and storage godowns. Few concerns of the kind in the Settlement have a heavier or more up-to-date plant, the latest labor-saving devices having been installed. The whole of the plant is motor-driven, power being generated by duplicate sets of 75-kilowatt dynamos, each giving 340 amperes at a pressure of 220 volts. These sets are run on alternate days. The dynamos are direct-driven by engines running at 550 revolutions per minute.

The scope of the works may best be illustrated by a detail sketch of the various departments. The general and drawing offices are spacious, well-lighted apartments, surrounded by wide verandahs. The building is two storeyed, and measures 100 feet long by 62 feet wide.

In the pattern-makers' shop, which is 80 feet long by 50 feet wide, are band and circular saws, planing machines, and lathes, grouped on a 25 horse-power motor, together with a modern mitreing machine.

The foundry is 204 feet long by 63 feet wide. A travelling crane of 15 tons' capacity has been erected. Castings up to ten tons can be made, the cupolas employed being of the Thwaites rapid pattern—one of 5 and the other of 2 tons' capacity—with blast from a Root's blower.

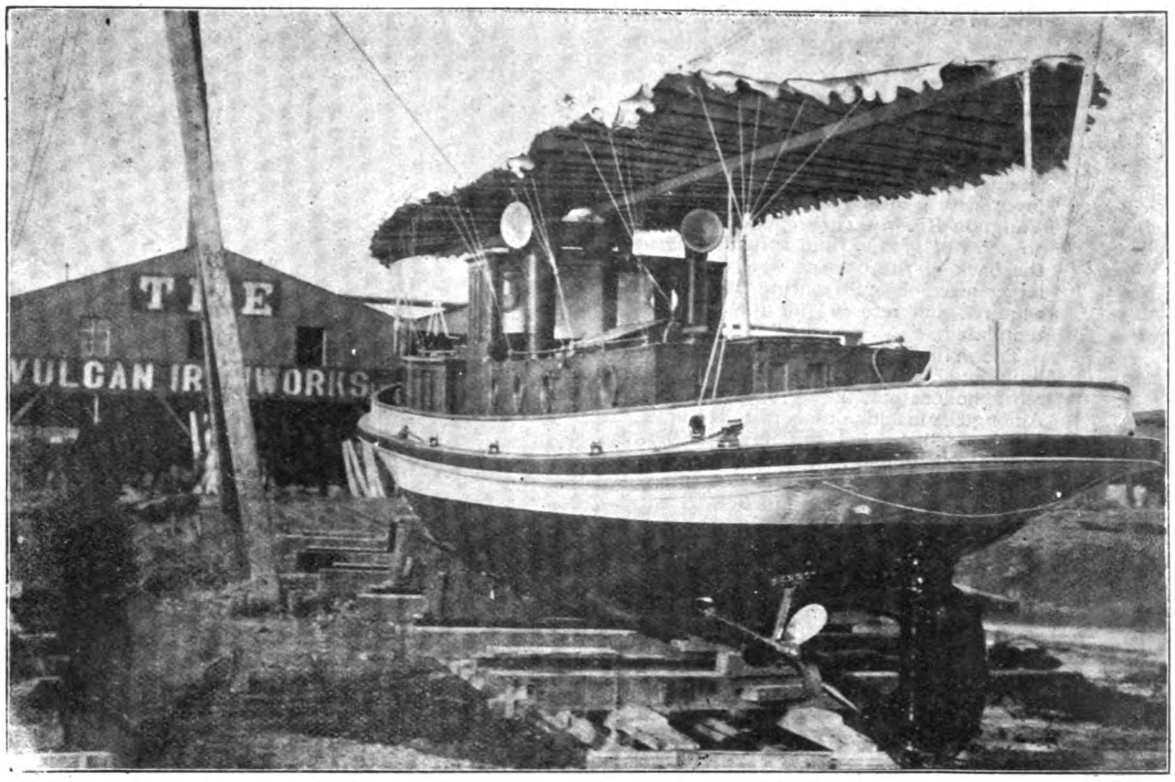
The machine shop, which is 175 feet long by 60 feet wide, contains a large chuck-lathe of 15 feet diameter; lateral lathes so arranged that, by combining two of them, a piece of work 30 feet in length can be taken; shaping, planing, drilling, slotting, shearing, and screw-cutting machines; a band saw for iron, and other machines, some of which are grouped, while others are geared independently to motors Overhead runs a travelling crane of 5 tons' capacity by Craven Brothers.

The blacksmiths' shop, 100 feet long by 52 feet wide, contains fourteen fires supplied with blast by independent Root's blowers, and is fitted with two steam hammers by Massey, one being of 30 cwt. and the other of 10 cwt. In the coppersmiths' shop, which is 45 feet long by 52 feet wide, a complete plant has been installed, consisting of two drilling machines, a hydraulic pipe bender, rolls, punching and shearing machines, etc.

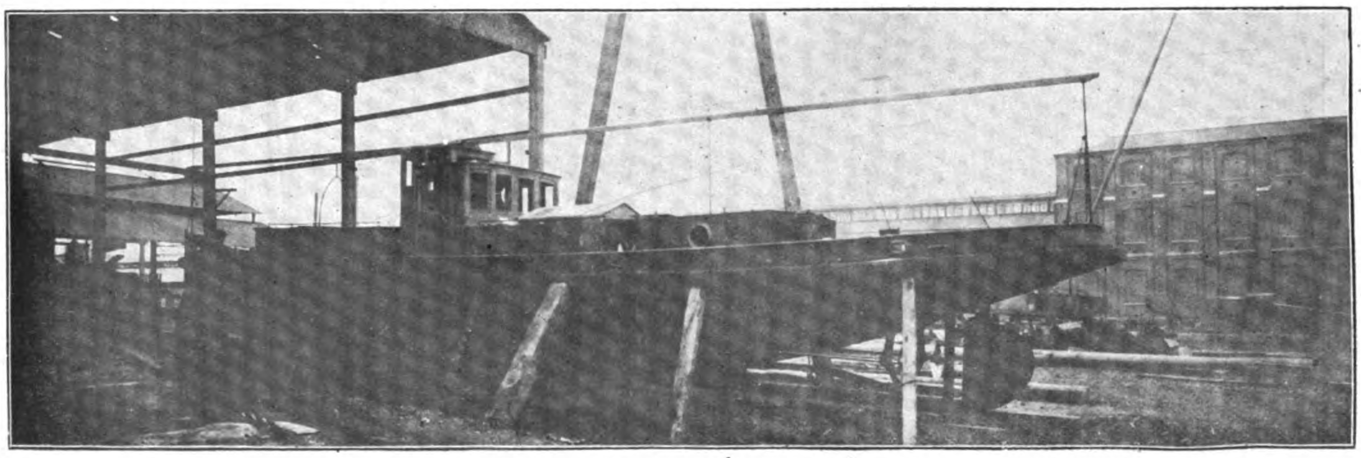
The largest machinery in the works is that located in the boiler shop. This building is 175 feet long by 85 feet wide. In it there are four punching and shearing machines, two large drills, two counter-sinking machines, one plate-edge planing machine, a set of heavy rolls for bending plates, and a machine known as a "mangle" for straightening plates. There is also a hydraulic plant, the accumulator being charged by means of a motor-driven three-throw pump. The power is applied to a large, fixed riveter, with 9 feet gap (on Tweddle's system, by the well-known firm of Fielding & Platt, of Gloucester), two portable riveters, for dock, bridge, and guider work; a hydraulic flanging machine, with arrangements for flanging Lancashire boiler flues; and two 4-ton hydraulic cranes, built by the Vulcan Ironworks.

Besides these shops there is a moulding loft, 140 feet long by 50 feet wide, and a carpenters' shop immediately beneath, with motor-driven machinery of all descriptions, whilst to facilitate repairs to small vessels of about 100 feet in length a patent slip has been laid down, equipped with motor-driven hauling gear manufactured by the firm.

The Vulcan Ironworks have constructed a creditable number of vessels of all descriptions, including steel and wooden lighters, pontoons, and pontoon-hulks, tugs, passenger tenders, steam and motor launches, etc., ranging in length from 20 feet to 250 feet. In addition to these, all kinds of fitting-out and repair work have been executed to ocean-going vessels calling at the port, and installations, overhauling, and general repairs have been carried out in the many factories and mills in and around this busy and industrious centre by skilled native labor under competent European supervision. Railway cars and coaches have been erected for various Chinese roads.



MOTOR LAUNCH "SUMATRA" BUILT BY THE VULCAN IRON WORKS LD. OF SHANGHAI FOR THE ASIATIC PETROLEUM CO. LD.—DIMENSIONS, LENGTH 66'-0" OVERALL, BREADTH 11'-0", DEPTH 5'-3", DRAUGHT 4'-3".



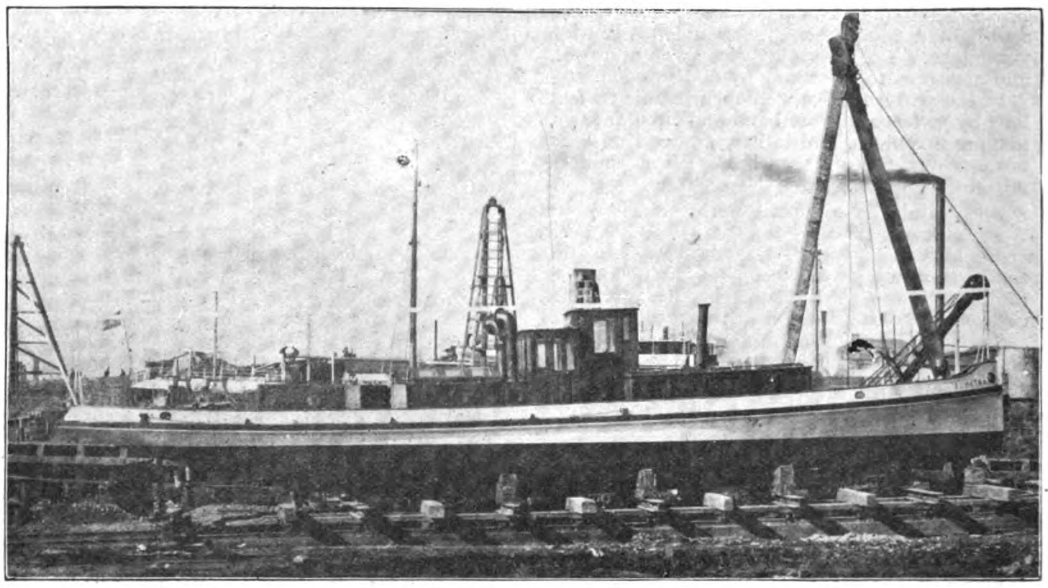
LAUNCH BUILDING SHED AT VULCAN IRON WORKS

MOTOR LAUNCH "VACUUM" BUILT BY THE VULCAN IRON WORKS, LTD.

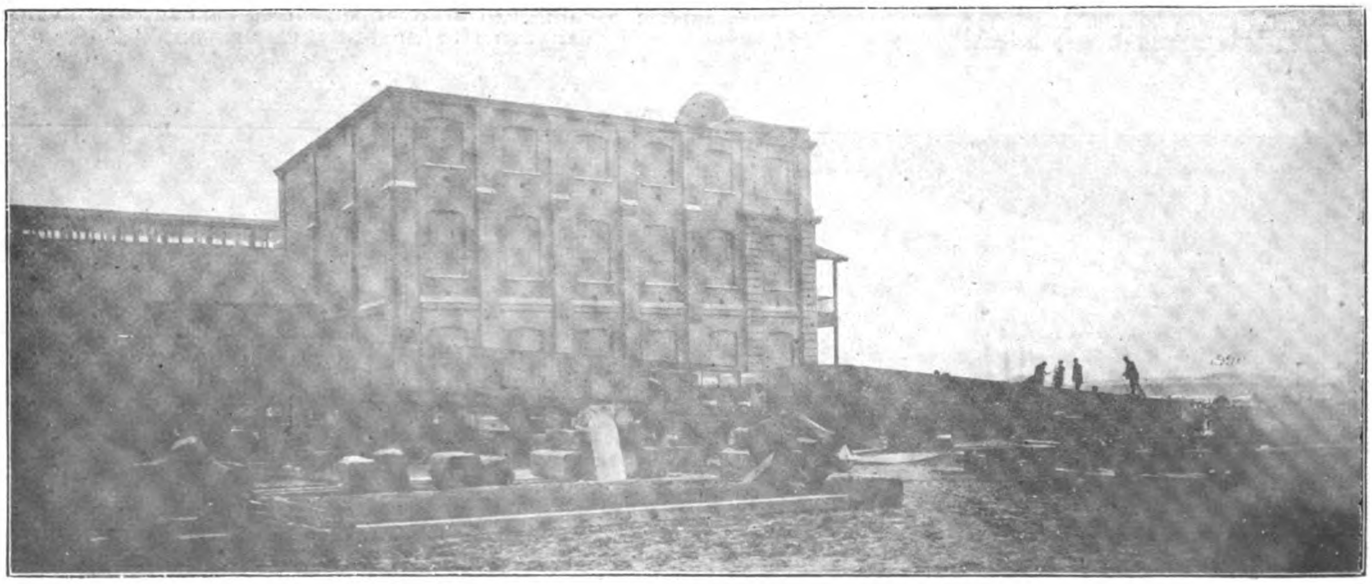
THE YANGTSZE ENGINEERING WORKS, LTD., HANKOW

The Yangtsze Engineering Works, Ltd., a company capitalized and managed by Chinese, was established in 1907 with its Head Office in the German Concession, Hankow. The works, situated at the Seven Mile Creek, command a prominent position on the lower reach of the Yangtsze River. They cover an area of about 30 acres of ground, and a further extension at the back of the present works, where another larger piece of land fronting the creek has been acquired and reserved for the purpose, is contemplated.

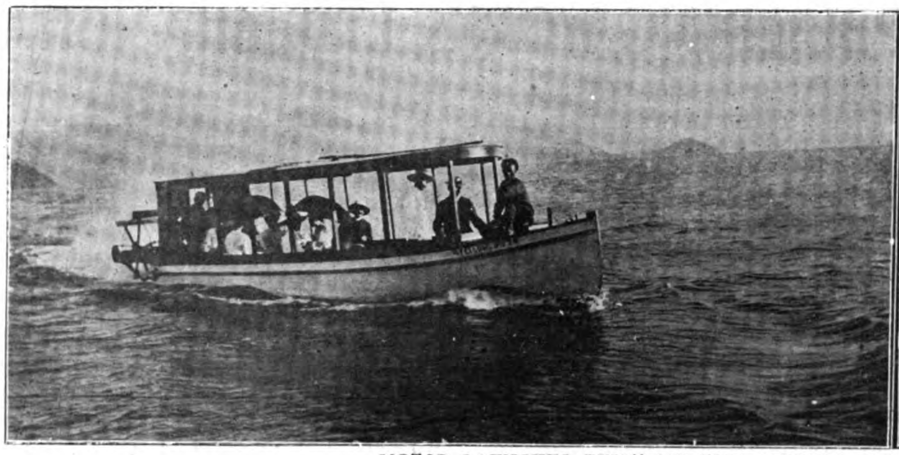
The main feature of the works is the bridge-building shop, which is well equipped with the most modern machinery for this class of work. Among the machine tools installed in this workshop may be noted a Patent Powerful Four roller and Mangles, Long Plate Edge Planers, Radial Drills, Girder Ending Machine, besides a full equipment of Punches, Shears, Cold Saws, Bending Presses, Riveters, Blowers, Furnaces and complete Hydraulic and Pneumatic Plants, while the handling of material is done by a powerful Electric Overhead Travelling Crane and Jib Cranes. The iron building is spacious, and is well arranged in the matter of light and ventilation.

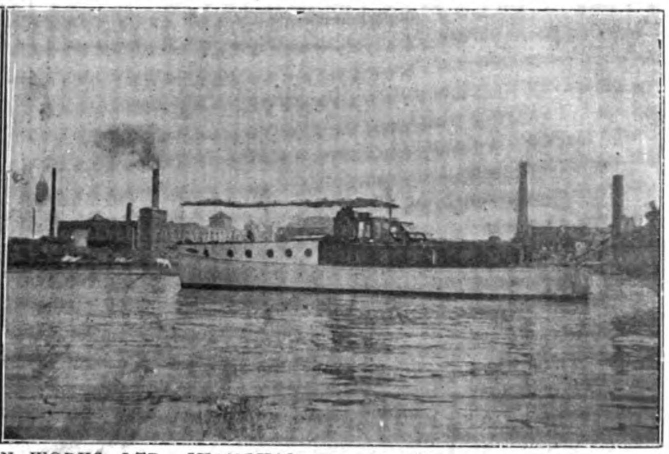


THE LAUNCH "SUMATRA" ON THE WAYS

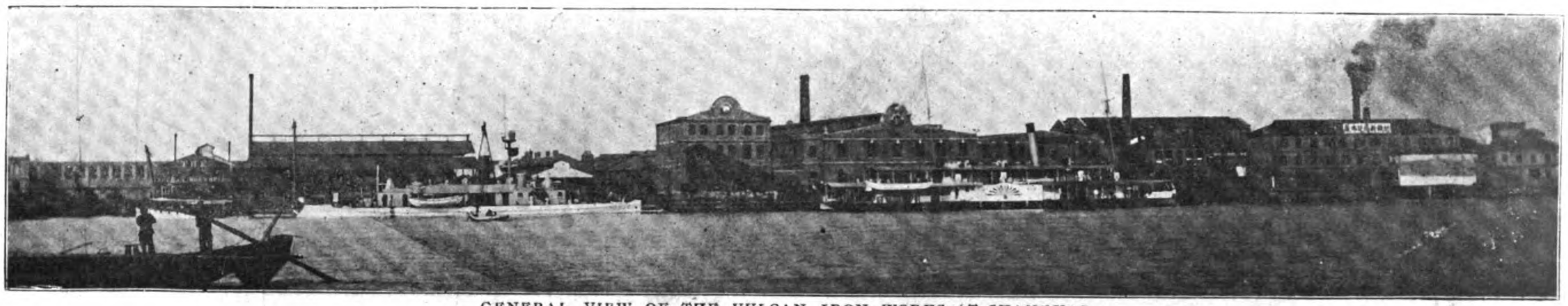


STEEL PONTOONS EIGHT DAYS AFTER CONTRACT AT THE VULCAN IRON WORKS LTD.





MOTOR LAUNCHES BUILT BY THE VULCAN IRON WORKS, LTD., SHANGHAI



GENERAL VIEW OF THE VULCAN IRON WORKS AT SHANGHAI

The office, the store, the fitting and machine shops, the point and crossings shop, the smithy and the foundry are, for convenience, arranged in a row, practically under one extensive roof, and are equipped with lathes, drilling, screwing machines, rail planers and sharpeners—the last specially adapted for dealing with points and crossings, of the latest patterns and imported from well-known English makers. The buildings of these shops were constructed of iron materials supplied by the Hanyang Iron and Steel Works.

All the machine tools are driven by electricity, the generating plant and motors having been supplied by the Lancashire Dynamo and Motor Co., while the gas suction plant was made by Crossley Bros. of Manchester. The power plant also supplies electric lighting throughout the works.

A loft with joiner's shop attached is erected at a little distance from the machine shops, in which patterns and templates are made.

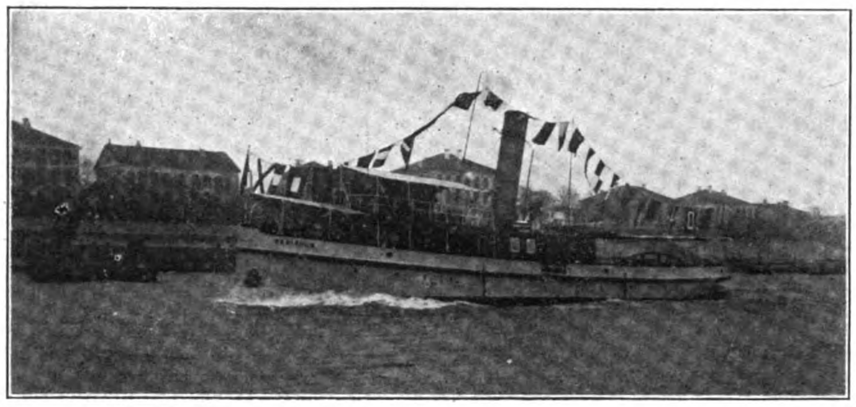
The special lines, besides shipbuilding and general engineering work, in which the Yangtsze Engineering Works possess exceptionally good facilities for handling, are bridge-building and making points and crossings.

The management aims at making the works thoroughly efficient and up-to-date in every respect, and is confident that they will occupy a place in the front rank of engineering concerns in China.

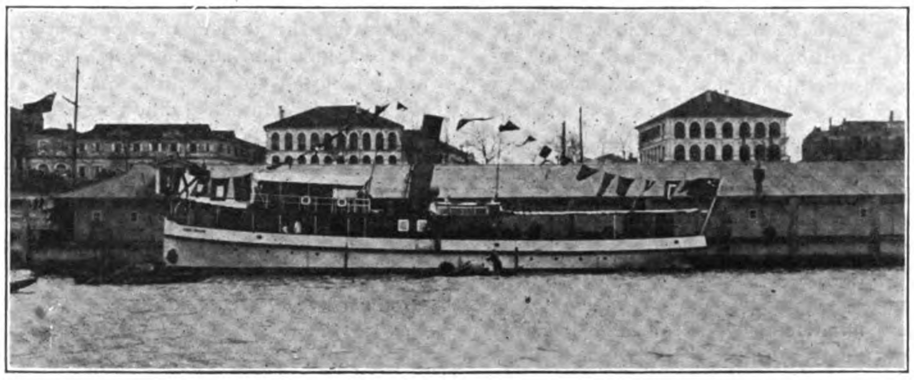
The Directors are Mr. V. K. Lee, General Manager of the Hanyang Iron and Steel Works, Mr. Lo Hung-chang, Manager of the Board of Communications Bank, and Mr. Sung Wei-chen, Manager of the Hankow Waterworks and Electric Light Co. The General Manager is Mr. Wong Kwong, M.I.N.A., M.I.S. Inst., and the staff, which is quite a large one, is composed wholly of Chinese with the exception of Mr. G. W. Cockburn, who is in charge of the Bridge Department. The latter gentleman is an English bridge engine r and designer of good experience and standing, having been or a number of years with Me.srs. Head, Wrightson and Co., Ltd., the Clevel nd Bridge Co. and other well-known bridge building firms.

Mr. Wong Kwong, the General Manager, is the only Chinese gentleman, who has been awarded the degree of M.I.N.A., M.I.S. Inst.

During 1909 they turned out one large steel tug and a good number of lighters, points, and crossings; they also executed a large amount of steel structural work and extensive repairs to steamers, tugs, and launches. The orders booked have necessitated the installation of an additional plant and the extension of the works in every way.



THE HAN SHUN UNDER WAY

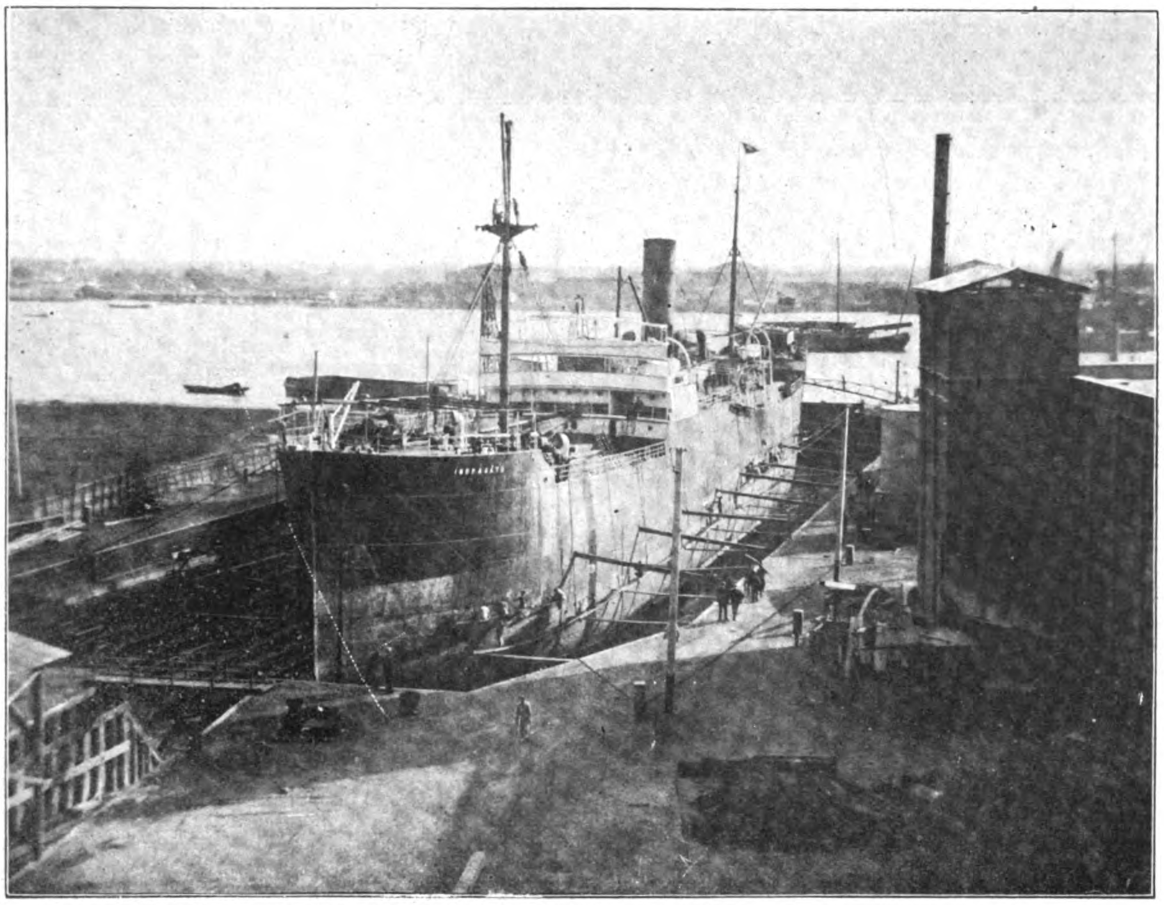


VIEWS OF THE STEAM TUG HAN SHUN BUILT BY THE YANGTZE ENGINEERING WORKS FOR THE HANYANG IRON & STEEL WORKS

The Steam Tug "Han Shun" is a steel vessel, 120′ 0″ long by 21′ 0″ beam by 12′ 0″ deep, propelled by one set of Compound Surface Condensing Engines with an indicated Horse Power of about 500. Her boiler is of the Cylindrical Multitubular type constructed to Board of Trade Rules for a working pressure of 120 lbs. per square inch. The Han Shun is specially designed and strongly built for towing purposes, her speed when light being 11 knots and with a tow of 1,000 tons, 7 miles per hour. The vessel has been running satisfactorily since the 15th March, 1910, when she was handed over by the builders, The Yangtse Engineering Works, Hankow, to the owners, The Hanyang Iron & Steel Works, Hanyang. The designer is the General Manager of the Yangtse Engineering Works, Mr. Wong Kwong, M. I. N. A., M. I Mech. E., etc.

NEW ENGINEERING & SHIPBUILDING WORKS, LTD., SHANGHAI

This enterprise has forged to the front as one of the leading shipbuilding and dockyard establishments of the Orient. Founded in 1900 as a limited liability company under the Hongkong Ordinances, the shares were taken up privately and are still so held. Messrs. Arnhold, Karberg & Co. are the general managers of the company and so successful have been its operations that the extensive additions to the original plant, including the great expense of constructing a drydock, have been paid for out of the earnings. These works situated on Yangtzepoo Road, with a deep sea frontage on the Whangpoo River, are equipped with hydraulic riveting machinery, pneumatic tools and electric drills for the quick execution of repair work, and an up-to-date plant in each of the various shops.

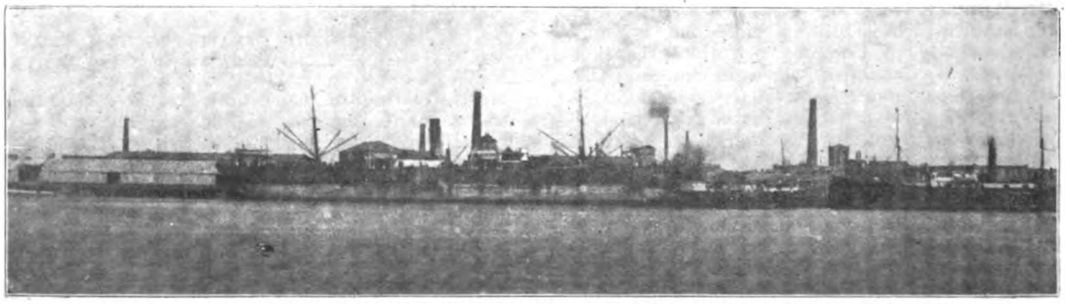


GENERAL VIEW OF THE YANGTSZEPOO DOCK, SHANGHAI.—S. S. INDRAMAYO, 5200 TONS, IN DRYDOCK, 410 FEET LONG

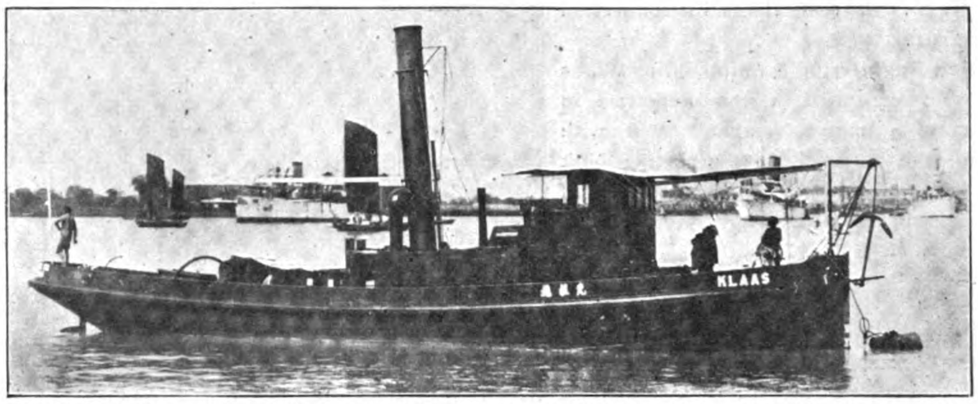
Since commencing operations the company has built over 150 vessels in steel and teak-wood, ranging from five to 500 tons each. Forty of these were steam vessels with an aggregate of 4,000 horse-power. The firm makes a specialty of light draught vessels, tug-boats, and lighters, and has been very successful with light draught tow-boats of the hollow stern type, some of which are now in constant employment at Hankow and Chefoo. It has constructed a large number of pleasure craft, for which the demand in Shanghai is growing. In the engineering shops the firm has constructed machinery aggregating 1,200 indicated horse-power for saw-mills, cotton mills, cigarette factories, etc., and erected tanks at Chingkiang, Tongku, and Hangchow for the Shell Company, as well as six large oil tanks for the Standard Oil Company—three of them at Shanghai, measuring 80 feet each in diameter, and 25 feet in height, and three at Hankow measuring 70 feet each in diameter. The orders for the boilers of American type, for the Shanghai and Hankow installations, were also entrusted to the firm. At the close of the Russo-Japanese War, the Company adapted five large vessels for the transport of troops, Each was fitted with bunks, officers' quarters, hospital accommodation, cooking ovens, and bathing appliances for a large number of men, the average number carried by each steamer being 2,000. Altogether some 500 men are constantly employed in the works.

In 1908 work was commenced on a drydock so as to enable the company to compete for and secure its share of the larger marine repair contracts. Profiting by the experience gained in building other docks in Shanghai, the work of construction was pushed ahead without any serious delays or handicaps and completed in twelve months.

The principal dimensions of the Yangtszepoo Dock are as follows: length on blocks 452ft.; width of entrance—bottom 60 ft.; coping 70 ft.; depth to floor, 27 ft,; depth of water at ordinary spring tides on 3 ft. blocks, 19 ft. Work on the dock was begun on May 22, 1908. The interior consists of mud terraces and planks, and the entrance is closed by a steel caisson, the only one of its kind in Shanghai. This caisson is equipped with electrical pumps, which are operated by



VIEW OF DOCK AND WORKS FROM THE RIVER.—S. S. INDRAVELLI JUST OUT OF DOCK; S. S. SIBIR ENTERING AND S. S. EIGER ALONGSIDE



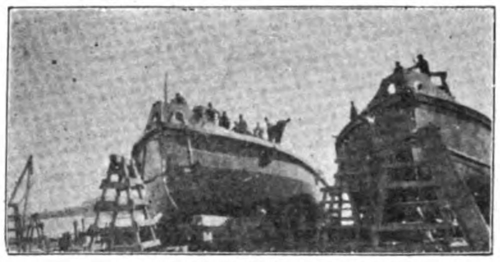
TUGBOAT BUILT AND ENGINED BY THE NEW ENGINEERING AND SHIPPING WORKS, LTD. FOR THE EAST ASIATIC PETROLEUM CO.

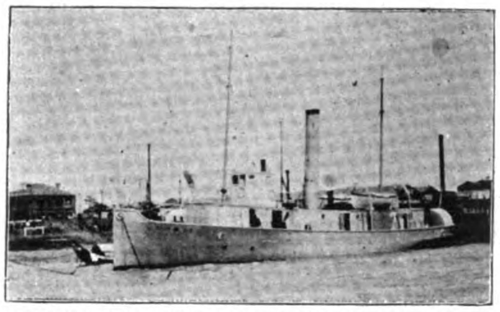
It may be mentioned that the dock was constructed in the short space of twelve months from start to finish, a record in dock building in this part of the world. Since the opening, the dock has been very well patronized. Last autumn the company salved the S. S. "Proteus" which was badly ashore on the shifting sands at the delta of the Yangtsze, the vessel was brought into dock where she was repaired and reclassed, the repairs included the renewal of the stern frame, stern tube, rudder and propeller, also a number of plates, etc.

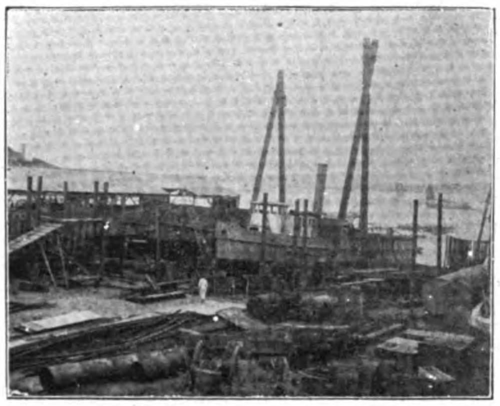
Sheerlegs are being erected which will be capable of handling weights of 60 tons. The works have a river frontage of 830 feet with an ample depth of water alongside for accommodating vessels which visit the port.

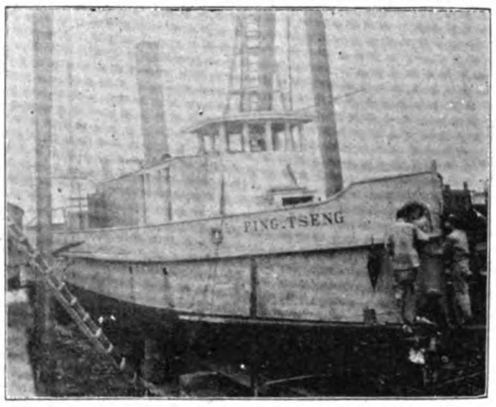
The organizer of the works and designer of the dry dock is Mr. John Blechynden,

ONE OF TEN UP RIVER LIGHTERS AFTER LAUNCHING

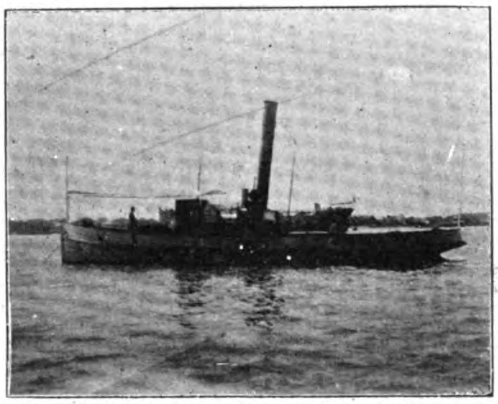

TWO OF TEN LIGHTERS FOR UP RIVER SERVICE


CHINESE CRUISER JUST PREVIOUS TO DEPARTURE FOR NORTHERN WATERS


PART OF SHIPYARD



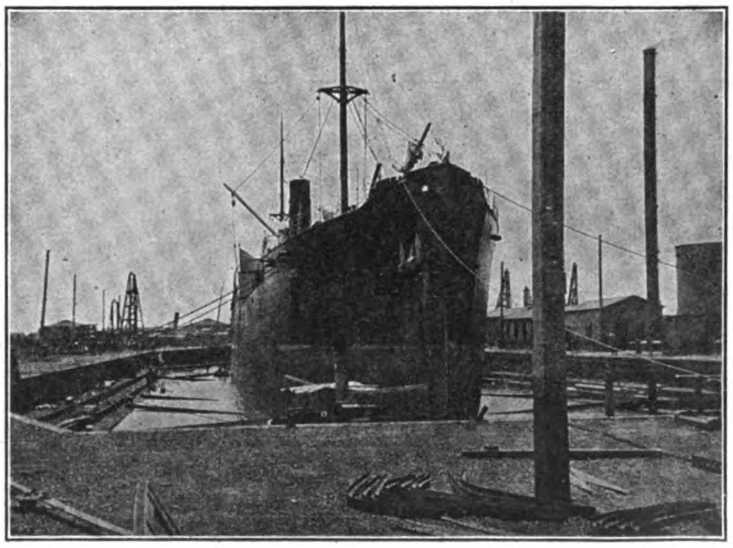
LIGHT DRAUGHT TOWBOAT HOLLOW STERN TYPE FOR UP RIVER SERVICE


TENDER YENTAI BUILT BY THE NEW ENGINEERING WORKS FOR THE CHINA NAVIGATION CO. FOR SERVICE AT CHEFOO

connexions with water-tight plugs on either side of the entrance. The caisson floats in 9 ft. of water, and as there are always 12 ft. on the blocks, the dock can be opened at shorter notice than any other in Shanghai.

The pumps for emptying the dock have been constructed on the premises and are placed in an engine-house on the west side, They consist of two 22-inch centrifugal pumps driven by compound surface-condensing engines, and can discharge 18,000 gallons of water a minute. With a vessel of moderate size on the blocks the dock can be emptied in from two to two and a half hours.

It is the intention of the New Engineering and Shipbuilding Works to add sufficient new machinery, etc., to cope with every kind of work that comes its way. The sanitary accommodation for the use of the crews of vessels under repairs includes a bathroom with hot and cold water laid on, and electric light. Ships in dock can be supplied with electricity or steam, and besides an efficient fire service a tank has been installed which has a capacity of 70 tons of filtered water.

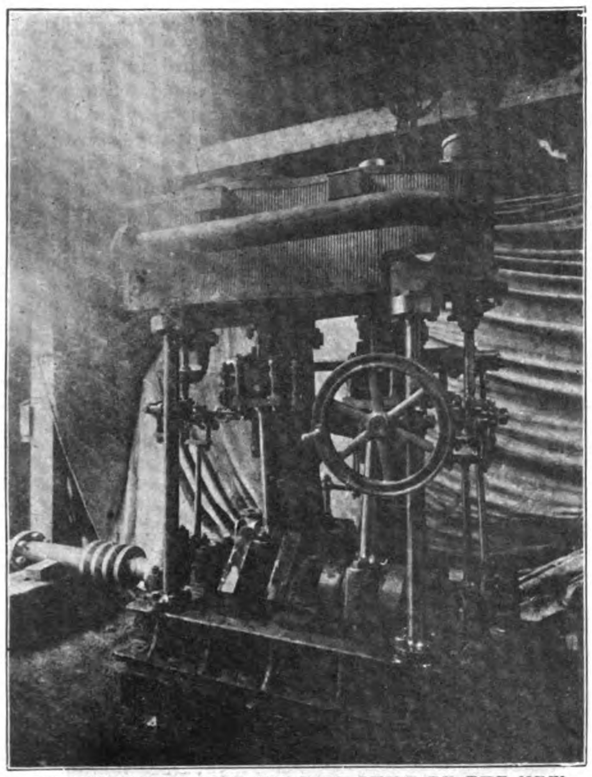

ANOTHER VIEW OF YANGTSZEPOO DOCK

M. I. M. E., who still retains his connection with the firm.

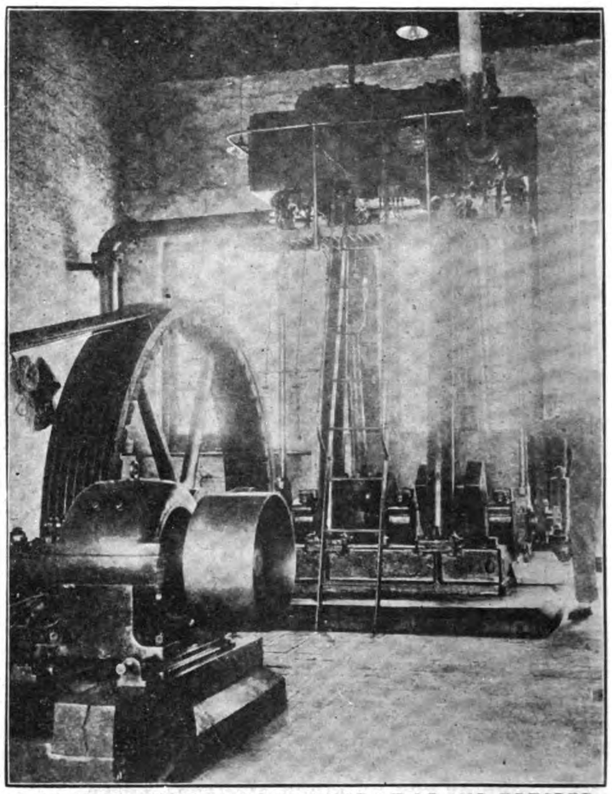
The New Engineering & Shipbuilding Works have also inaugurated a new departure in the form of a native sampan fitted with tanks for the purpose of transporting bulk oil. These tanks have a capacity each of 60 tons of oil and the craft is propelled by two motors of 50 b. h. p.

CHINA GENERAL ENGINEERING CO., SHANGHAI.

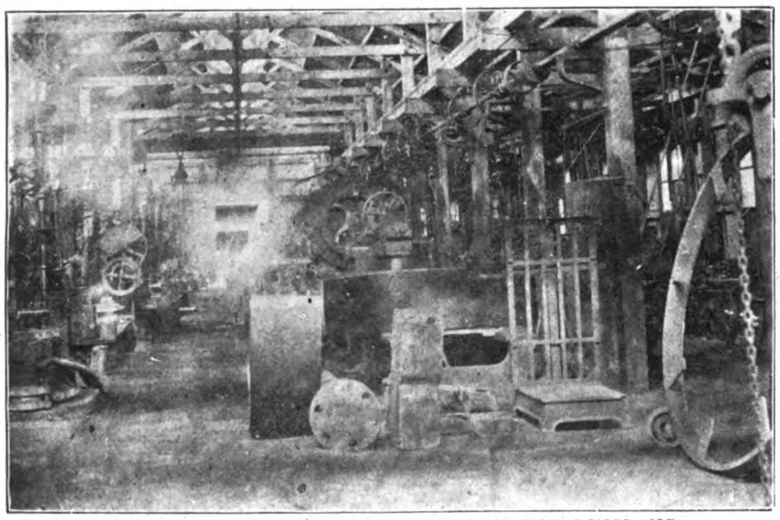
This company specializes in motors and motor boats, holding The Grei and Fairbanks Morse & Co.'s agencies for China. It has its own boat building works on Liziza Road by the side of the Foochow Creek, and it has successfully built over 100 motor launches destined for all parts of the Empire. Up in far Szechuan, in the Fungting Lake and as far north as Harborvsk, their launches are plying the rivers of China. The Imperial Maritime Customs, and the Russian Government, give this firm an almost exclusive monopoly of their motor boat trade. The manager, Mr. O. Jansen, C. E., has a wide experience in motor boat work.



COMPOUND MARINE ENGINES BUILT BY THE NEW ENGINEERING AND SHIPBUILDING WORKS

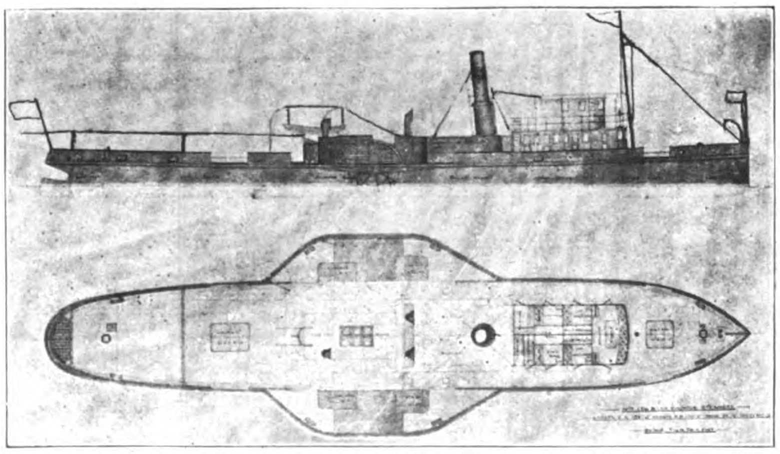


COMPOUND ENGINE FOR SAWMILL BUILT AND ERECTED BY THE NEW ENGINEERING WORKS

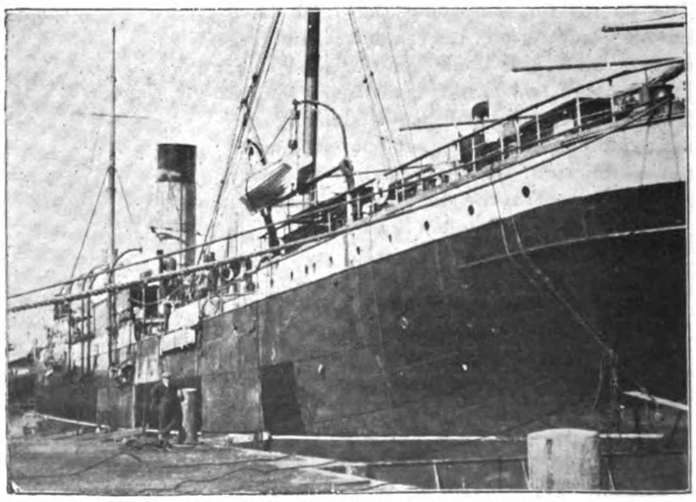


PART OF MACHINE SHOP OF THE NEW ENGINEERING AND SHIPBUILDING WORKS

ENTRANCE TO THE WORKS ON YANGTSZEPOO ROAD, SHANGHAI



PLAN OF PADDLE STEAMERS 150 FEET LONG BUILT AND ENGINED BY THE NEW ENGINEERING AND SHIPBUILDING WORKS, LTD.

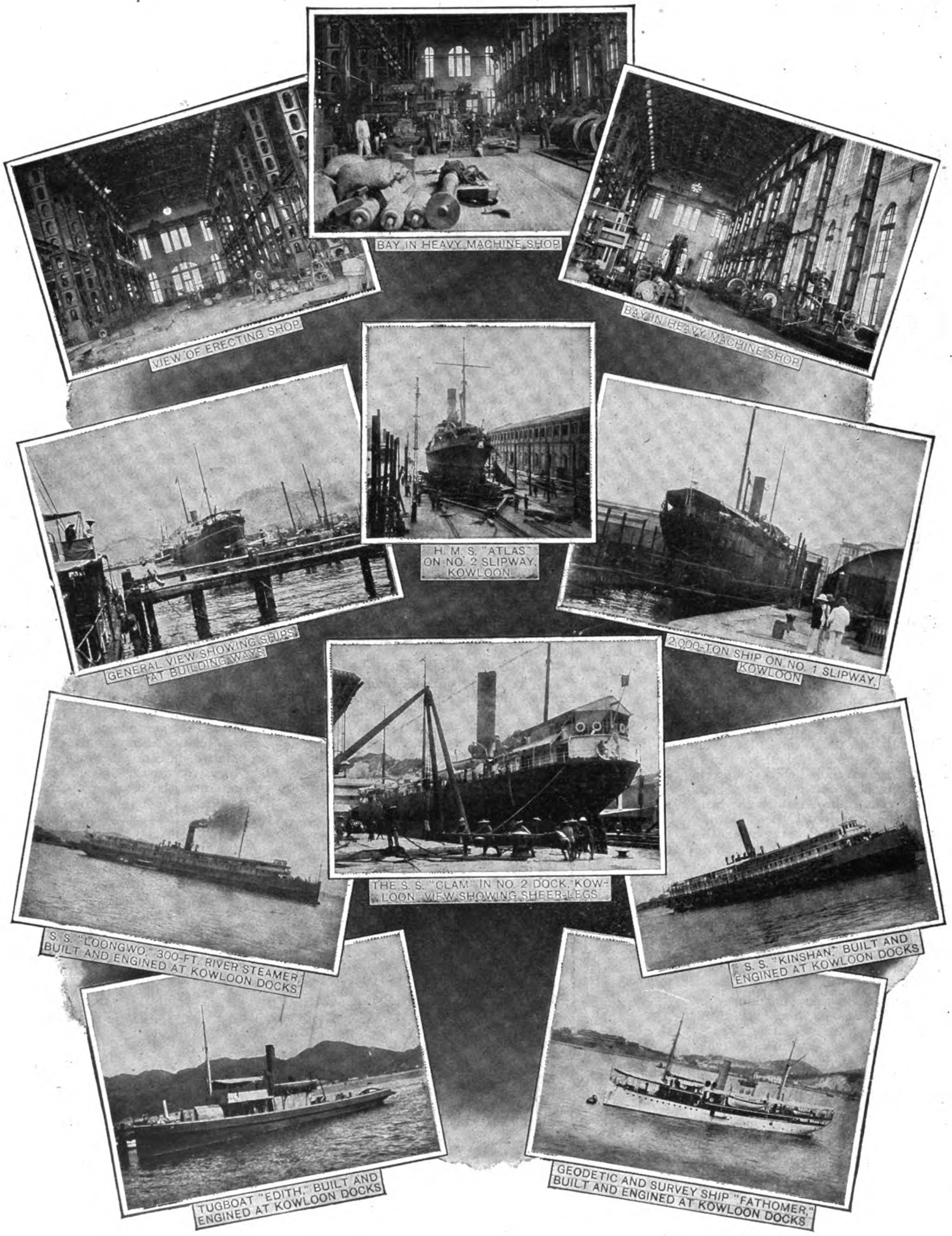


RUSSIAN VOLUNTEER FLEET STEAMER YARASLAV IN DRY DOCK

THE HONGKONG AND WHAMPOA DOCK CO., LTD., OF HONGKONG

The Hongkong and Whampoa Dock Co., Ltd., was established in 1863 and is one of the leading shipbuilding establishments in the Far East. The company has a most extensive plant and engages in shipbuilding, marine and land engineering, iron and brass founders work, forging, electrical construction, railway supplies, etc. The head office is located at the Kowloon Dock and the Town Office in Queen's Building, Hongkong.

The Company has six granite dry docks and two patent slipways which are situated at their three establishments at Hunghom, Tai-Kok-Tsui and Aberdeen. Their dimensions are as follows:



VIEW OF ERECTING SHOP

BAY IN HEAVY MACHINE SHOP

BAY IN HEAVY MACHINE SHOP

H. M. S. "ATLAS" ON NO. 2 SLIPWAY, KOWLOON

GENERAL VIEW SHOWING SHIPS AT BUILDING WAYS

2,000-TON SHIP ON NO. 1 SLIPWAY, KOWLOON

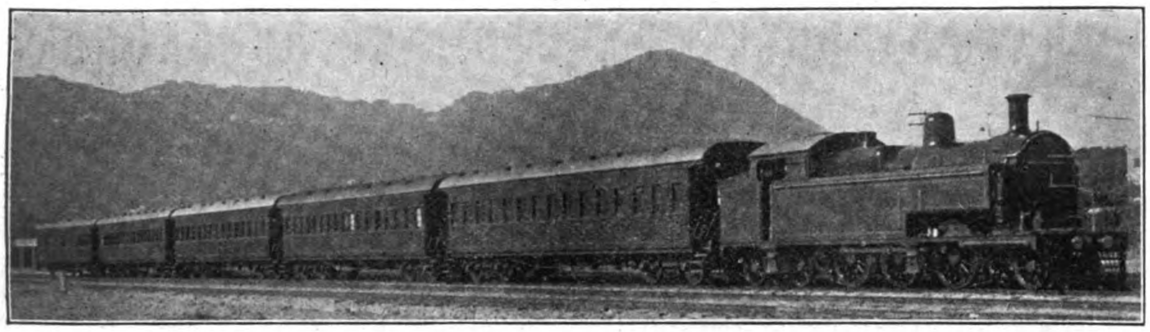
THE S. S. "CLAM" IN NO. 2 DOCK, KOWLOON. VIEW SHOWING SHEER-LEGS

S. S. "LOONGWO," 300-FT. RIVER STEAMER BUILT AND ENGINED AT KOWLOON DOCKS

S. S. "KINSHAN," BUILT AND ENGINED AT KOWLOON DOCKS

TUGBOAT "EDITH," BUILT AND ENGINED AT KOWLOON DOCKS

GEODETIC AND SURVEY SHIP "FATHOMER," BUILT AND ENGINED AT KOWLOON DOCKS



PASSENGER COACHES BUILT BY THE HONGKONG & WHAMPOA DOCK CO., LTD., FOR THE BRITISH SECTION OF THE KOWLOON-CANTON RAILWAY

Name of Dock or Slip.	Length on Keel Blocks.	Entrance Breadth.	Depth over Sill at ordinary Spring Tides.	Rise of Tide. Spgs.	Rise of Tide. Neaps.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*
"Kowloon."					
No. 1 Dock........	700	86 ft. top 70 bottom	30	7′ 6″	3
No. 2 Dock........	371	74	18′ 6″	7′ 6″	
No. 3 Dock........	264	49′ 3″	14	7′ 6″	
No. 1 Pat. Slip.....	240	60	14	7′ 6″	
No. 2 Pat. Slip.....	220	60	12	7′ 6″	
"Tai-Kok-Tsui."					
Cosmopolitan Dock..	466	85′ 6″	20	7′ 6″	
"Aberdeen."					
Hope Dock........	430	84	23	7′ 6″	
Lamont Dock......	333	64	16	7′ 6″	

The principal works are at Hunghom on the Kowloon side of the Harbour, distant about two miles from the City of Victoria, and among some of its chief points of interest may be mentioned:—

Machine Fitting and Erecting Shop—Three Bays, each 272′ 0″×52′ 0″, containing together two 10-ton electric overhead travelling cranes, one of 15-tons and two of 20-tons. The shop is equipped with a complete plant of up-to-date high speed machine tools of every description capable of turning out work of the heaviest class with expedition. Among the principal tools may be mentioned the following: *Longest Lathe* can take 75′ 0″ between centres, height of centres from top of shears 27″, motor driven.

Largest Chuck Lathe can take 10′ 0″ diameter in chuck, motor driven.

Lathe for heavy turning with high speed tools can take 21′ 0″ between centres; height of centres 21″ motor driven.

Largest Planing Machine, 8 feet between housings, can clear 8′ 0″ high from table, length of stroke 20′ 0″ motor driven.

Largest Milling Machine, can machine 5′ 0″ above table, width between housings 5′ 0″. Table 12′ 0″×5′ 0″, traverse of table 12′ 0″.

Largest Slotting Machine, 27 inches stroke, motor driven.

Wall Planer, to plane 12′ 0″ vertically and 12′ 0″ horizontally, motor driven.

Largest Boring Machine, suitable for cylinders up to 5′ 0″ diameter by 9′ 0″ long.

Boiler Shop.—One Bay 262′ 0″×62′ 0″ contains one 30-ton overhead electric travelling crane and one hydraulic rivetter.

One Bay 262′ 0″×42′ 0″ contains one 40-ton overhead electric travelling crane and one 10-ton overhead rope driven crane with one largest size hydraulic rivetter, drilling and screwing machines, etc.

Boiler Shop Smithy.—Two Bays, each 121′ 0″×30′ 0″ containing 28 fires and two 8-cwt. steam hammers.

Shipyard and Boiler Shop Machine Shed.—This shed comprises four bays, each 262′ 0″ × 30′ 0″, containing punching and shearing machines, light and heavy rolls, machine for rolling angle frames, plate edge planes, drilling machines, hydraulic flanging press, hydraulic manhole punch, hydraulic keel plate bender, hand overhead cranes, emery wheels, grindstones, etc.; also one bay 209′ 0″×56′ 0″ containing angle bar cutting machine and punch and 17 angle smith's fires and one bay 139′ 0″ × 42′ 0″ containing large rolls suitable for plates 30′ 0″ wide, and overhead hand cranes.

The ship building yard which adjoins has a frontage of 570 feet and will admit of ships 500 feet in length being laid down. The position is well protected, and there is deep water for launching ships with safety.

Blacksmith Shop.—This department comprises three bays, each 195′ 0″×50′ 0″ containing 48 ordinary smith's fires, one furnace for 1-ton hammer, six 8-cwt. steam hammers, one 1-ton steam hammer, four bolt, nut and rivet making machines and furnaces, radial drills, screwing machines, etc

Forge.—160′ 0″×82′ 0″ with three furnaces, one to suit each size steam hammer. The largest hammer is 10 tons, suitable for heaviest marine shafting work, etc., and there are two 2-ton hammers with steam cranes to each. There are two open hearth smith's fires. The company can handle and make forgings up to 20 tons, the largest propeller shaft forged being about 10 tons and the heaviest stern frame, about 8 tons.

Foundry.—This department comprises one bay 54′ 0″×43′ 0″, three cupolas for cast iron, 3 steam cranes, and one 2-ton air furnace for brass.

One bay 48′ 0″×43′ 0″ with brass furnace, white metal furnace, overhead cranes, etc.

One bay 60′ 0″×57′ 0″ with one 10-ton steam crane, gear wheel moulding machine, oil furnace for melting brass, etc., capacity 500 lbs.

The largest cylinder cast is 10 tons, the largest propeller 18′ 0″ diameter, 8 tons, cast iron, the heaviest bronze propeller blades 3½ tons each and the longest liner cast, 25′ 0″ in one length.

The heaviest casting turned out is an anvil block for 10-ton steam hammer representing 100 tons of cast iron.

The greatest monthly output was 130 tons cast iron and 7 tons brass.

Sawmill and Joiner Shop.—The sawmill and joiner shop is completely equipped with a large plant of all descriptions of steam driven saws and wood working tools of most modern and improved design.

The extensive carpenter shops and boat building sheds adjoin the saw mill.

Steam Shears.—Powerful steam shears 80 feet high and capable of lifting 75 ons, stand on a granite wharf with deep watertfrontage.

Railway Lines are laid throughout the yard to the various departments enabling gear and materials to be transported with convenience and expedition.

Electric Light is installed in all the shops, the yard and around the docks, admitting of work on ships being carried on at night. Current can be supplied to ships lying in dock or alongside.

The Galvanizing Plant by electrical deposit is of the most improved type and is capable of taking plates 20′ 0″×9′ 0″.

The Company's *Stores* carry a heavy stock of all descriptions of steel, iron, and timber for shipbuilding or repairing, engine and boiler fittings, etc., all of the best quality, which are supplied at reasonable rates and delivered with despatch.

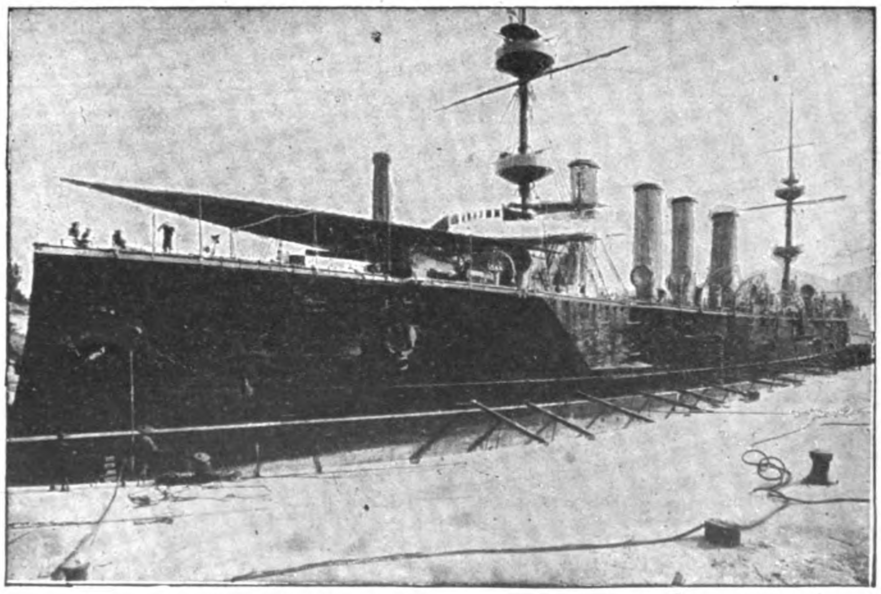
Compressed Air Plant.—The works are equipped with a complete installation of compressed air tools in the way of rivetters, hammers, drills, chippers, etc.

Salvage Steamer.—The twin screw salvage steamer *David Gillies* is fully equipped with a complete plant of powerful salvage gear and tools and on call can be despatched at a moment's notice. In addition, the Company has on hand a number of large and small centrifugal wrecking pumps, diving gear and other salvage appliances, all in readiness for shipment without delay.

Steam Launches.—The company's large fleet of fine steam launches is always in readiness to attend on ships in the harbour, for conveyance of workmen, material, etc.

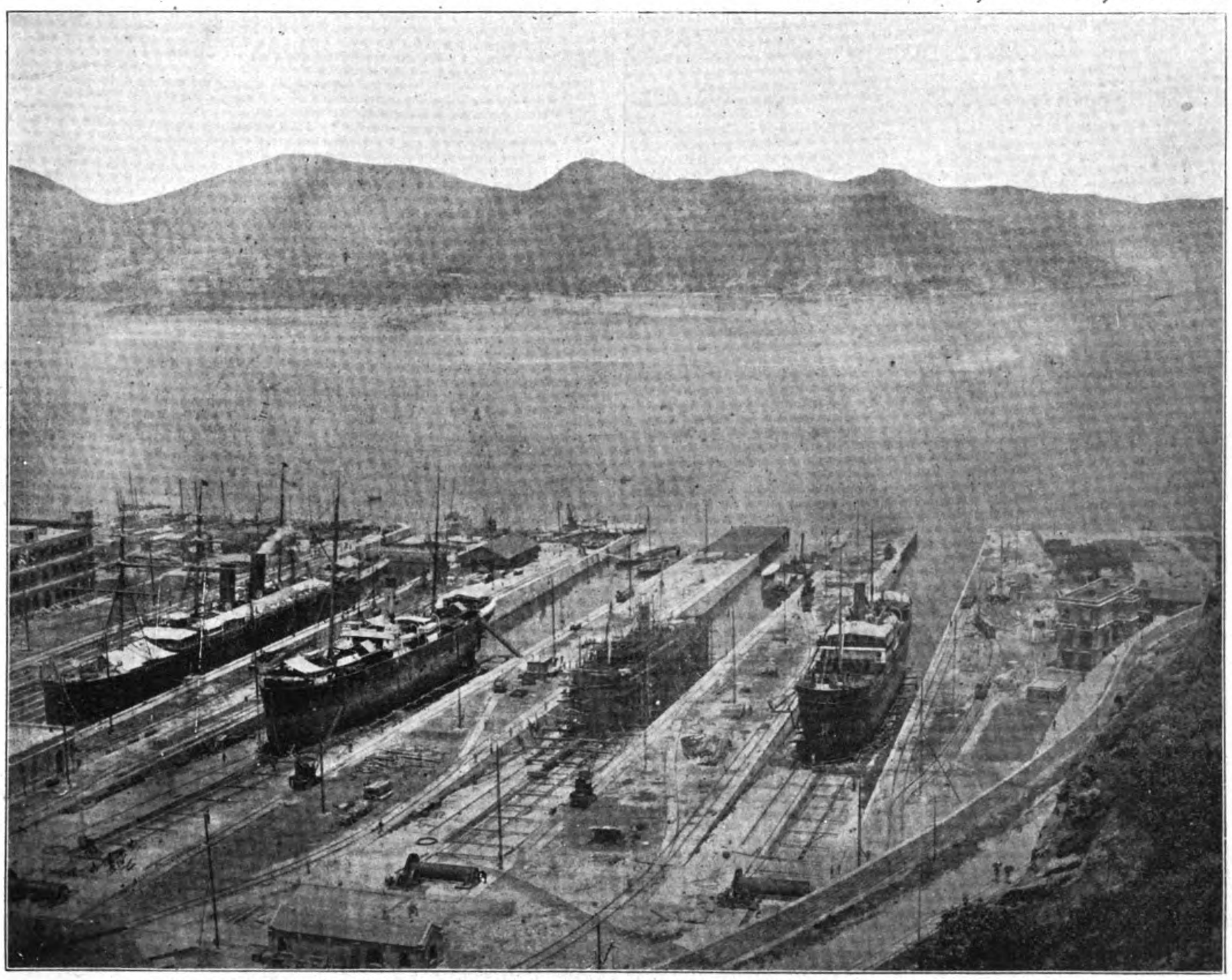
Cosmopolitan Dock.—The Cosmopolitan Dock is also on the Kowloon side of the harbor and is situated at Tai-Kok-Tsui in a well sheltered position and distant about two miles from Victoria. The dock, which is built of granite, can accommodate ships up to 450′0″×53′0″×21′0″ draft. The workshops possess every facility and appliance necessary for efficient and prompt repairs to ships or machinery.

Aberdeen Docks.—The Aberdeen Docks are situated at the head of an inlet on the South



H. M. S. POWERFUL IN NO. 1 DOCK, KOWLOON.

THE TAIKOO DOCKYARD & ENGINEERING CO. OF HONGKONG, LTD., HONGKONG



TAIKOO DOCKYARD & ENGINEERING CO. OF HONGKONG: GENERAL VIEW OF DOCKS AND SLIPWAYS

The Taikoo Dockyard & Engineering Co. of Hongkong, Ltd., whose management is represented by the well known firm of Messrs. Butterfield & Swire is the latest addition to Far East Dockyard and Engineering establishments. Commenced in 1900 and first opened to public business at the end of 1908, it is now fully equipped with the most modern machinery and appliances for the whole range of constructional, docking and repair work.

The site, with its dry dock, slipways and workshops covers an area of 50 acres with magnificent water frontage and approach. The accommodation is ample for the largest vessels afloat in these waters, as an examination the undernoted figures will show, and supplemented by a full technical staff and skilled foremen from the yards of Clyde and Tyneside it takes its stand amongst the leading enterprises of its kind in modern times.

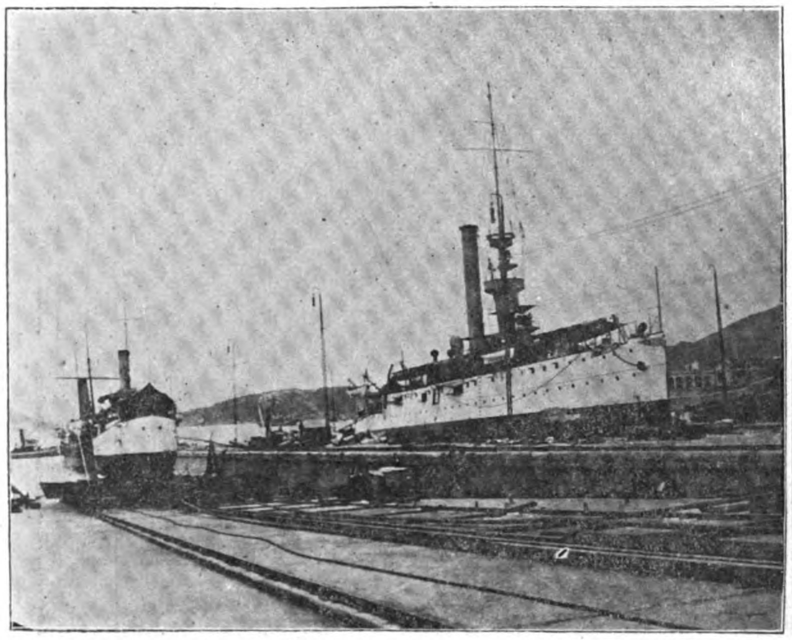
The yard now actively competes for Far Eastern business. It has the docking and repair work of the large fleet of China Navigation Co. steamers in its charge in addition to that of other well known companies trading on the adjacent coast of China and in Southern waters. The big Pacific liners of the Pacific Mail and Toyo Kisen Kaisha dock and repair there, and although the past two years have not been noticeable for marked activity in shipbuilding construction, the company has secured a fair share of such work as has been offering.

The Dock.—Situated just inside the Lyeemoon Pass, the Northern and deeper entrance to the harbour, the Dock is conveniently placed for the full and free manoeuvring of ships prior to docking or repairing, being well clear of any congestion of shipping in the harbor.

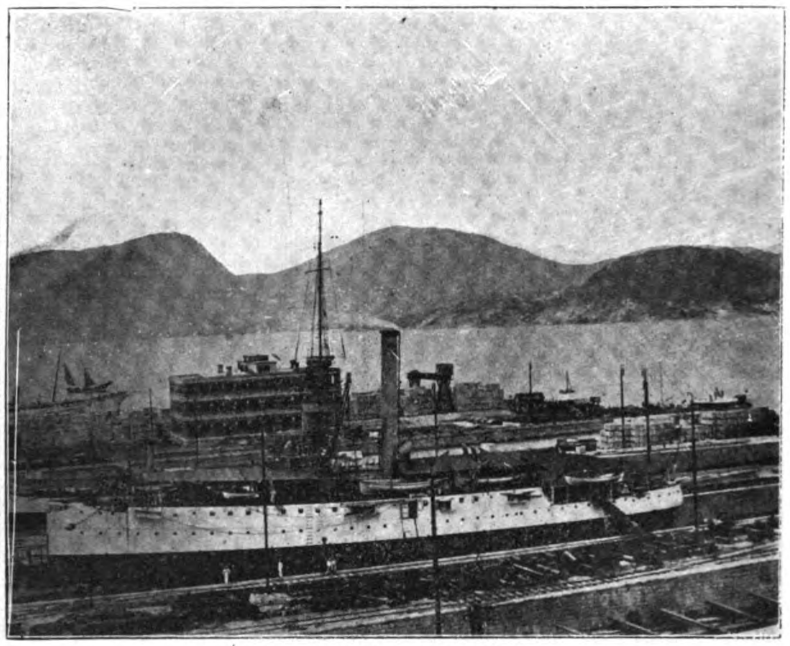
side of the island of Hongkong. The entrance is safe and the anchorage good. The docks are substantially built throughout with granite.

The company is in a strong position to undertake all classes of constructional and general engineering work, also locomotives, railway rolling stock and plant, bridge work, etc. Extended experience and success in the building of coast and river steamers, tug boats, shallow draft vessels, stern wheelers and launches of all descriptions. A speciality made of high speed passenger and cargo motor boats. Defibrating, pulp, sugar and auxiliary machinery for land and marine purposes, pumps, etc., made with expedition. The plant throughout is of the most modern and up to date type. Docking and repairs effected with promptitude and at moderate charges. All classes of cocks, valves and other ships' fittings supplied at reasonable rates. A large and varied stock of steel and iron plates, bars, etc., always kept on hand

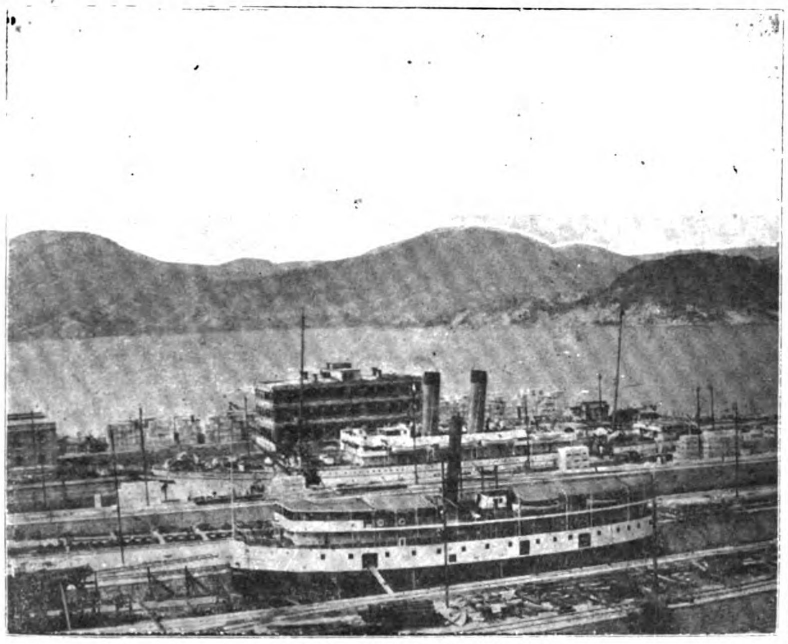
THE S. S. UNION ON THE SLIP CUT AND DRAWN APART



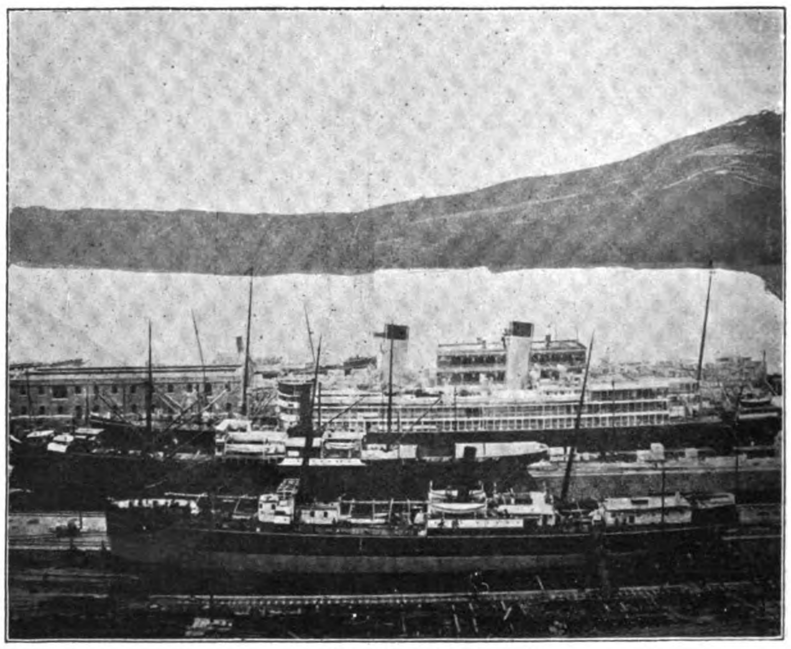
U. S. S. HELENA ON NO. 2 SLIP AND U. S. GUNBOAT "SAMAR"



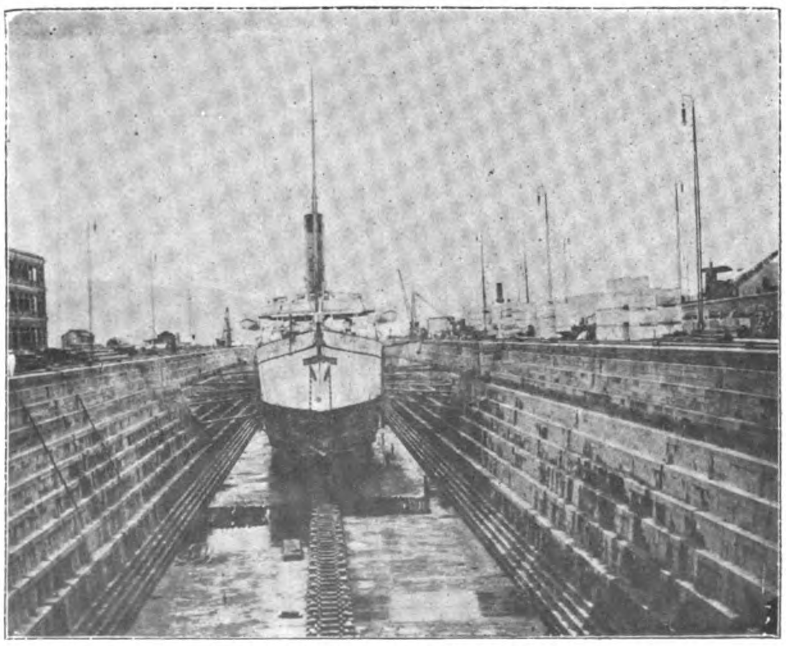
U. S. S. HELENA ON NO. 2 SLIP



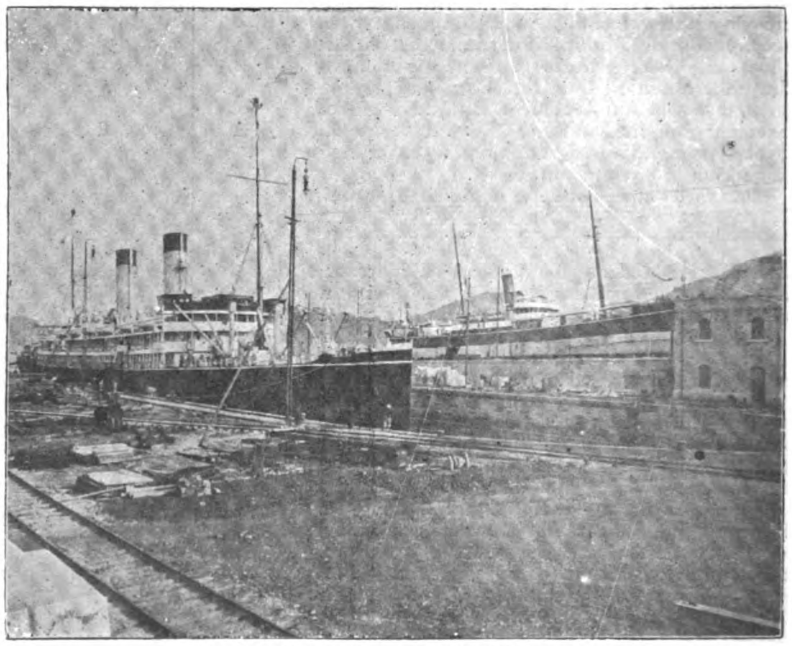
T. S. S. "NIPPON MARU" IN DOCK



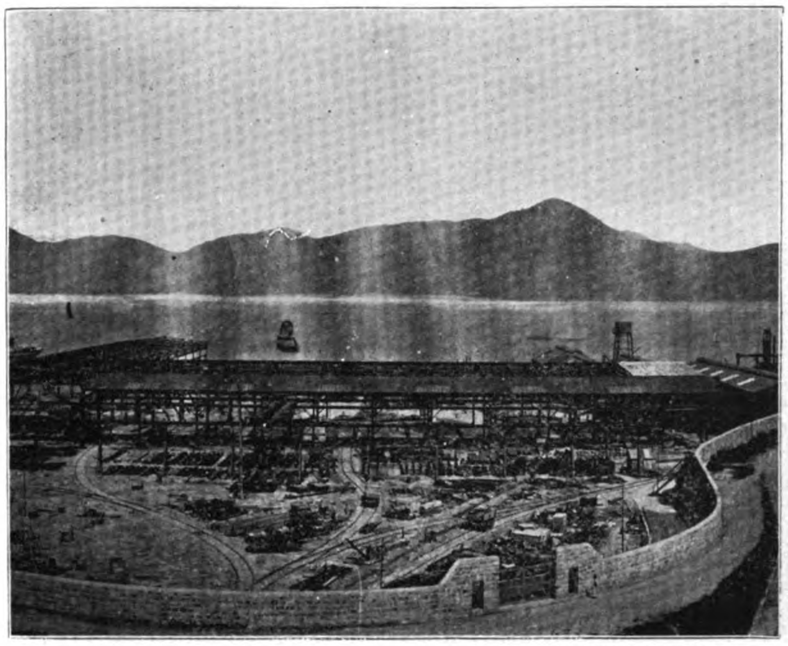
S. S. "CHIYO MARU" IN DOCK



T. S. S. "NIPPON MARU" IN GRAVING DOCK

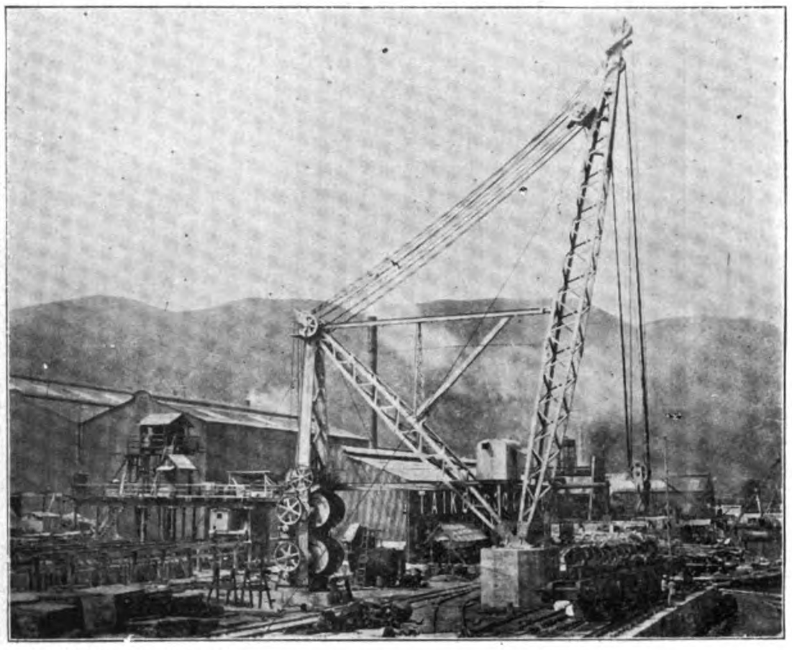


S. S. "CHIYO MARU" IN DOCK



PLATER'S SHEDS

TAIKOO DOCKYARD & ENGINEERING WORKS



100-TON CRANE

The following are a few interesting facts concerning it:

It is built to British Admiralty requirements.

It is founded on a solid rock bottom, and built of cement concrete lined with granite throughout.

It can be filled in 45 minutes and pumped out in 2 hours and forty minutes.

Its dimensions are: 787 ft. extreme length, 750 ft. on the blocks, 120 ft. width at coping, 77′ 6″ width at bottom, 88 ft. width of entrance at top, 81′ 0″ width of entrance at bottom, 34′ 6″ depth over centre of cill at high water spring tides, 31′ 0″ depth over side of cill at high water spring tides.

Caisson.—A feature of the dock is the caisson which is of the new box sliding type, built by Messrs Hanna Donald & Wilson of Paisley.

It is electrically driven, and can be hauled from, and to its chamber across the sill in 4½ minutes.

A collapsible bridge is fitted to the top of the caisson which folds down automatically to allow the caisson to enter its chamber.

The Dock Pumps.—These consist of two sets of "Conqueror" parallel type, made by Messrs. W. H. Allen, Sons & Co., Ltd., of Bedford, having suction and discharge branches of 54 inches diameter, each driven by an electric motor of 600 H. P., 2 sets of 54 inch sluice valves, with motors for operating, an electrically driven air pump for charging same, and a 10″ drainage pump.

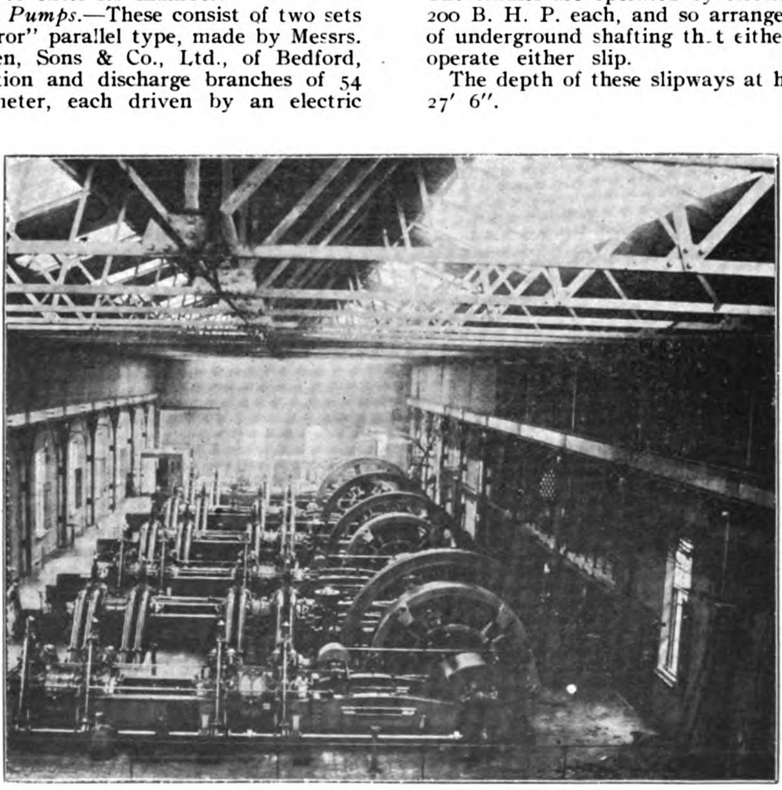
THE SLIPWAYS.

The No. 1 Slipway.—This is 1,030′ long and 80′ wide. It is capable of taking up steamers 300′ long, drawing 18′, and of 2,700 tons displacement. The hauling rope is 14″ steel and the drum (7 ft. diameter) for winding the rope, weighs 36 tons. A vessel of 2,700 tons displacement can be hauled up in 2 hours and a small coaster in one hour. The depth at the entrance at high water is 28′ 6″, the length of slip above high water is 437′ on rail level; above low water is 593′ on rail level.

The Nos. 2 and 3 Slipways.—These are each 993½′ long and 60′ wide.

They can each take up steamers 290′ long, drawing 17′, of T. 2,000 displacement. Vessels can be hauled up in 1¾ hours. The hauling ropes, as in the No. 1 Slipway, are of 14″ steel. The cradles are operated by electric motors of 200 B. H. P. each, and so arranged by means of underground shafting th.t either motor can operate either slip.

The depth of these slipways at high water is 27′ 6″.



INTERIOR OF POWER HOUSE

The length above high water is 405′ on rai level and above low water 561′ on rail level.

Steel Pierheads.—These give a fair lead to ships entering all slips.

Patent slips are recognized as affording superior facilities and favorable conditions for painting with the best preservative results, owing to the free circulation of air under and around vessels in their elevated position on the slips, and advantages of this nature have already been remarked on vessels painted on the Taikoo Slips.

The Building Yard.—The building yard is 550′ long, 300′ wide, and is fully equipped for the construction of all classes of floating craft. Ranged round the building yard are the platers shed, moulders loft, joiners and pattern makers shops and the necessary shipbuilding stores.

The Chief Motive Power is electricity generated by means of gas engines described later under the heading of "Power House."

Gas Producers.—Gas is produced from three Double Shell Mond Gas Producers made by the Power Gas Corporation of Stockton-on-Tees, capable of generating gas equal to 4,000 B. H. P. of which 3,000 is for the gas engines and 1,000 for the furnaces, etc., throughout the yard. This gas plant is situated on the Northern side of the yard adjoining the sea wall

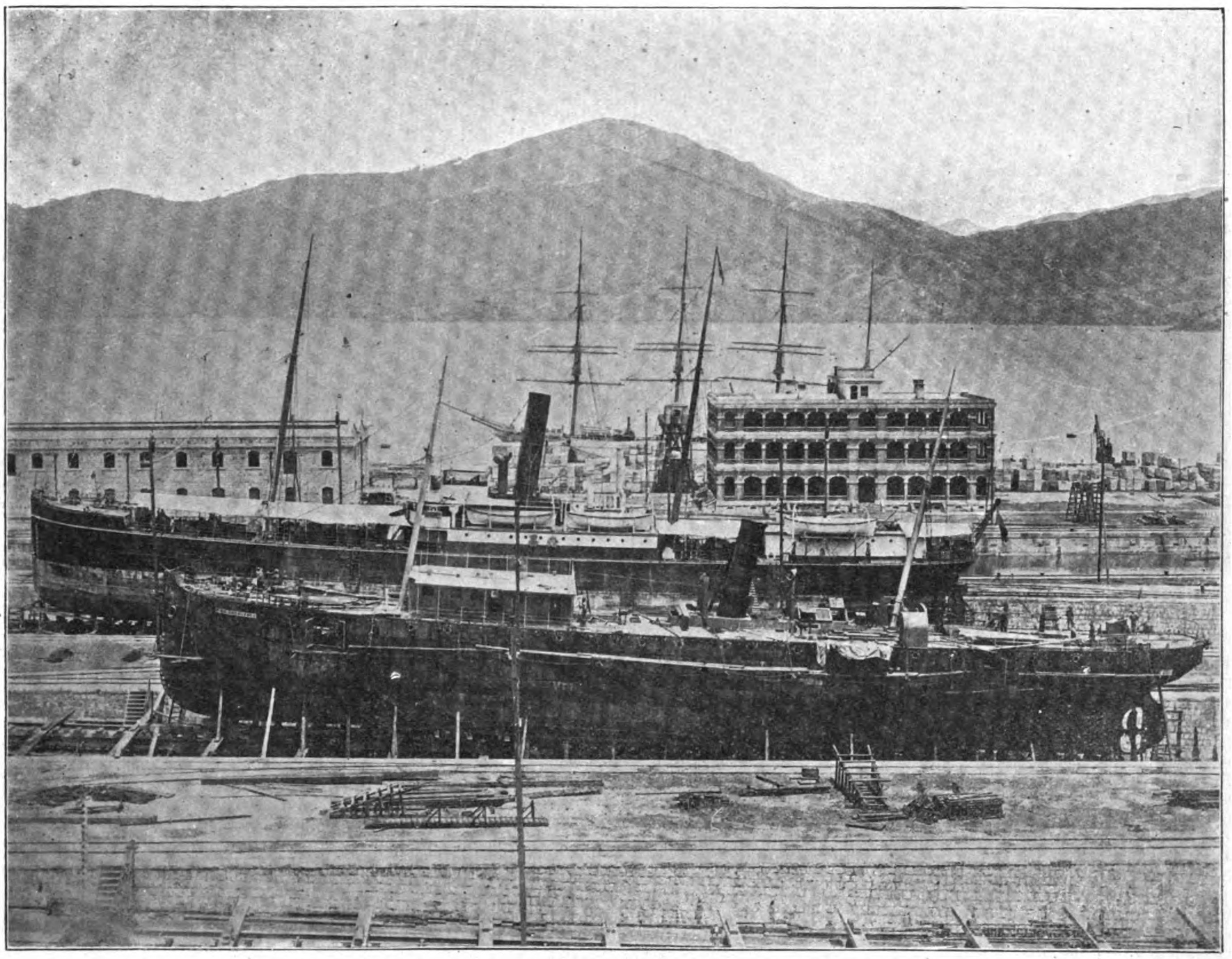
Power House.—The power house consists of a building 280 feet long by 57 feet wide in which are installed the following:

Two tandem double acting gas engines of the Cockerill-Westgarth type manufactured by Messrs. Richardsons, Westgarth & Co., Middlesborough, each capable of giving 550 B. H. P. coupled direct to two 375 K. W. Compound wound continuous current generators.

Two twin tandem double acting gas engines of the Cockerill-Westgarth type, each capable of giving 1,100 B. H. P. coupled direct to two 750 K. W. Compound wound continuous current generators, which transmit the power to various parts of the yard for driving machinery for all purposes.

Two sets of three throw motor driven hydraulic pumps made by Fullerton Hodgart & Co. of Paisley, for a working pressure of 1,000 lbs. per square inch coupled to an accumulator, are situated here, from which are led pipes to the different shops for flanging, heavy riveting, shell and keel plate bending, joggling machines, etc., by hydraulic power.

Two sets "Sentinel" Patent Compound motor driven air compressors by Alley & Maclellan Ltd. of Glasgow, are capable of compressing 500 cubic feet of free air per minute to 100 lbs. per square inch. From these are led pipes to the dock slipways and various shops for pneumatic riveting, caulking, chipping, drilling, etc.



S. S. "UNION" IN TAIKOO SLIP SHOWING PROGRESS OF WORK ON SEPT. 5TH, 1910

The full length of the building is traversed by a 15-ton electrically operated crane.

The Main Workshops.—These comprise boiler shops, engine erecting shops, heavy and light machine shop, brass finishing shop, forge and smithy, iron and brass foundries, coppersmiths' and plumbers' shops, etc.

Other departments situated at convenient positions in the yard to the work they undertake are joiners and patternmaking shops, timber stores and saw mills.

The Cranes.—The electric sheers, manufactured by Messrs. Geo. Russell & Co. of Motherwell, situated on the sea wall, lift 100 tons at a 70′ radius and smaller weights at a larger radius, with an increased speed.

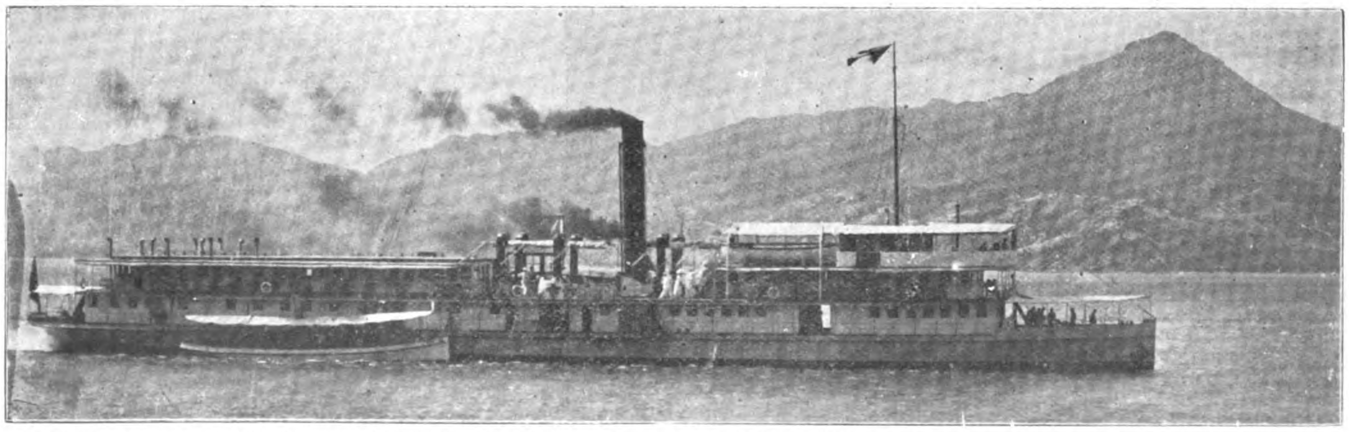
The various workshops are fitted with electric overhead travelling cranes for dealing with weights ranging from 5 tons in the shops for light work to 100 tons in the boiler shop, and there are locomotive cranes and derricks throughout the yard.

The Sea Wall.—There is a depth of water of 39 feet at high water spring tides for the greater part of the length of the wall which will enable ships of any size to berth alongside for the removal of fitting of heavy boilers, machinery, etc.

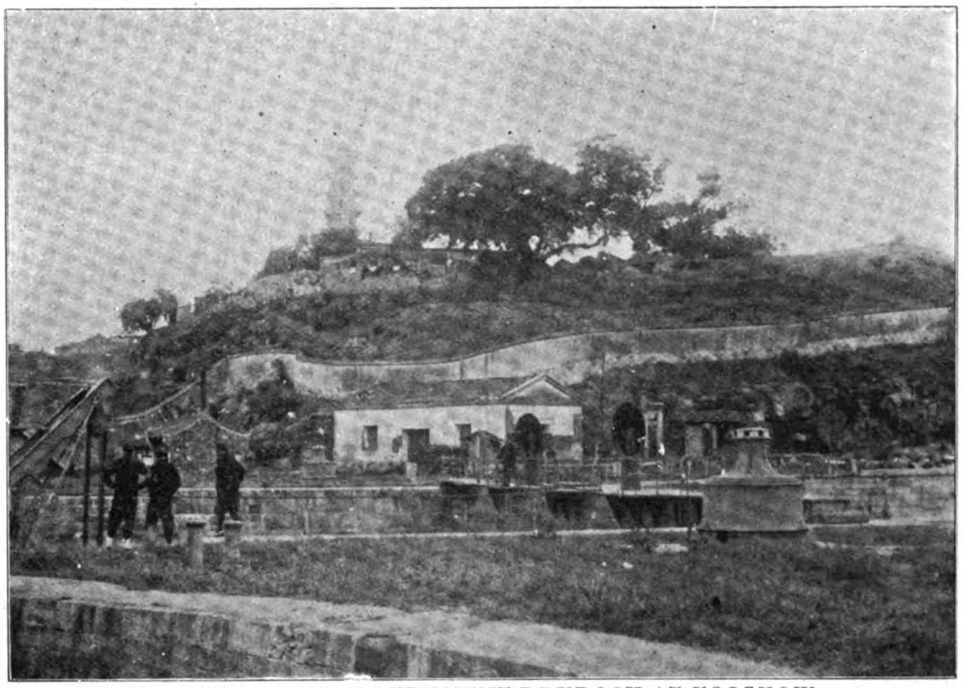
In addition to the 100 ton sheers, waggon and cranes roads are installed at the quay side, so that other cranes can deal with lighter loads at points along the wall.

The Offices.—These are a substantial block of buildings overlooking the harbor on the one side, and the entire dock premises on the other. They are 3 storeyed fire-proof and built of brick and cement concrete floors comprising accommodation for the management and secretarial staff, counting house and drawing and time offices.

The Dwelling Houses for managers of departments are commodious buildings erected on hill sites commanding a complete view of the yard and sea approaches. There are blocks of foremen's houses overlooking the yard, and native houses have been erected in the vicinity capable of accommodating over 6,000 workmen.

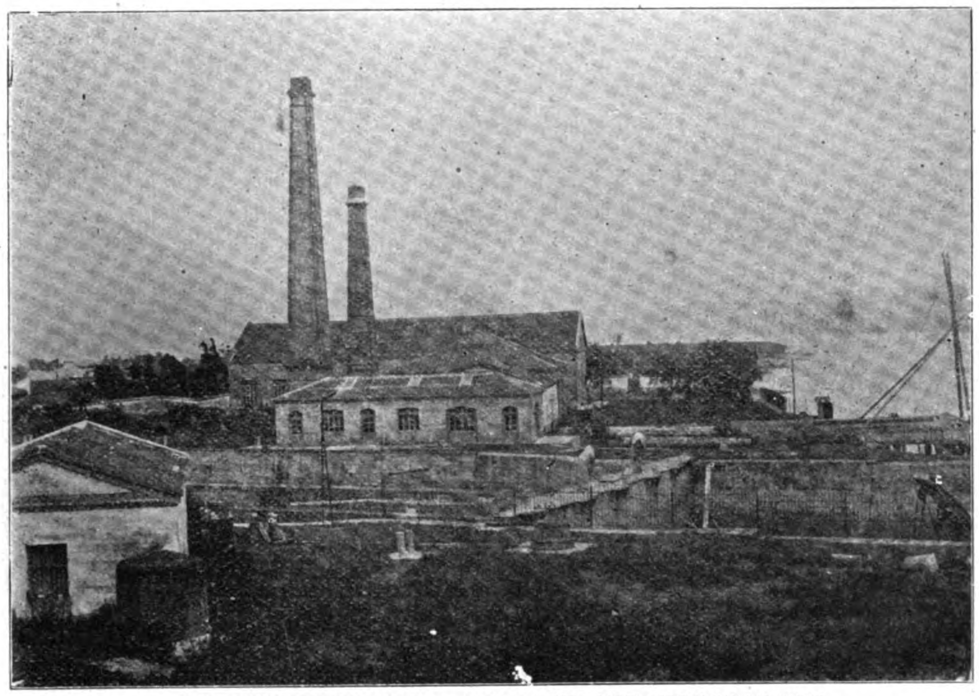


TWIN SCREW STEAMER "SHASI." LENGTH 215′ 40″ BEAM, AND 10′ 6″ DEPTH, BUILT BY THE TAIKOO DOCKS FOR THE CHINA NAVIGATION CO., LTD., FOR PASSENGER AND CARGO TRAFFIC ON THE YANGTSZE



THE CHINESE GOVERNMENT DRYDOCK AT FOOCHOW

Located at Pagoda Anchorage a mile distant from the Arsenal. Its entrance is silted up and has to be dredged to permit of docking a ship



THE FOOCHOW DRYDOCK.—DOCK ENTRANCE AND PUMP HOUSE

THE FOOCHOW ARSENAL AND DOCKYARD

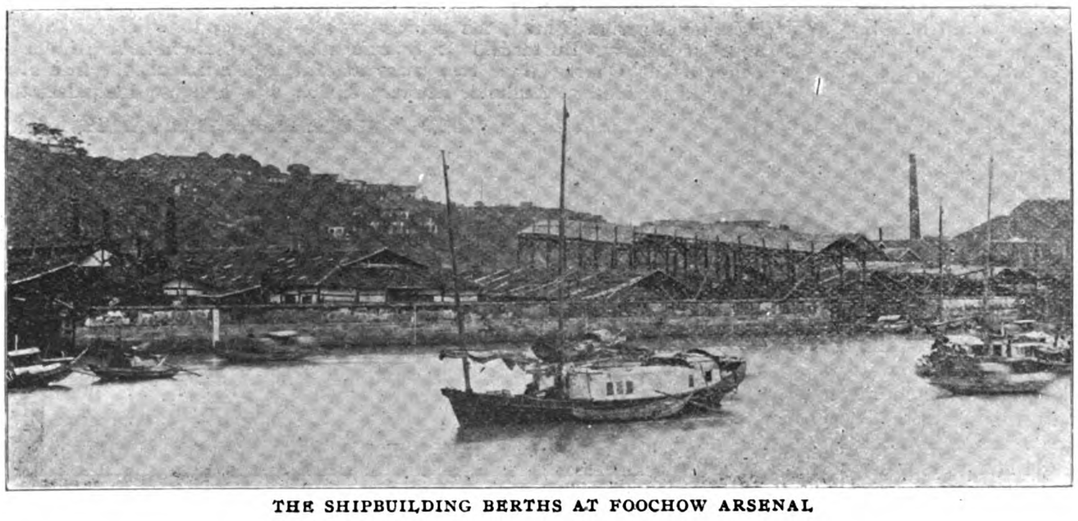
This important Imperial Naval Arsenal and Dockyard is situated at the Pagoda Anchorage in Foochow and is known locally as the Mamoi Arsenal. This institution was first built under French direction in 1875, and by a singular turn in international relations was almost destroyed by the French Fleet under Admiral Courbet in 1884 as well as all the fortifications and Fokien naval forces. Since that time the arsenal has been restored and in addition a new dock was ordered constructed in 1887 on Losing Island. This dock is over 300 feet in length and modernly equipped. It has very powerful pumps and a steel caisson making it a very important yard for the repair of Imperial vessels and for the construction of small craft. The reconstruction and direction has been carried on largely under French experts. The extension of the present establishment is now under consideration, and last year the Peking Government sent a deputation abroad to study shipbuilding and the management of naval yards in foreign countries and arranged for the purchase of a large site in addition to the present works for the construction of additional buildings for machine shops and foundry.

Of the recent vessels turned out by this dockyard was the S. S. *Ning Shao* for the Ningpo, Shaoshing S. N. Co., for the service between Shanghai and Ningpo, that made her initial trip July 19th of last year.

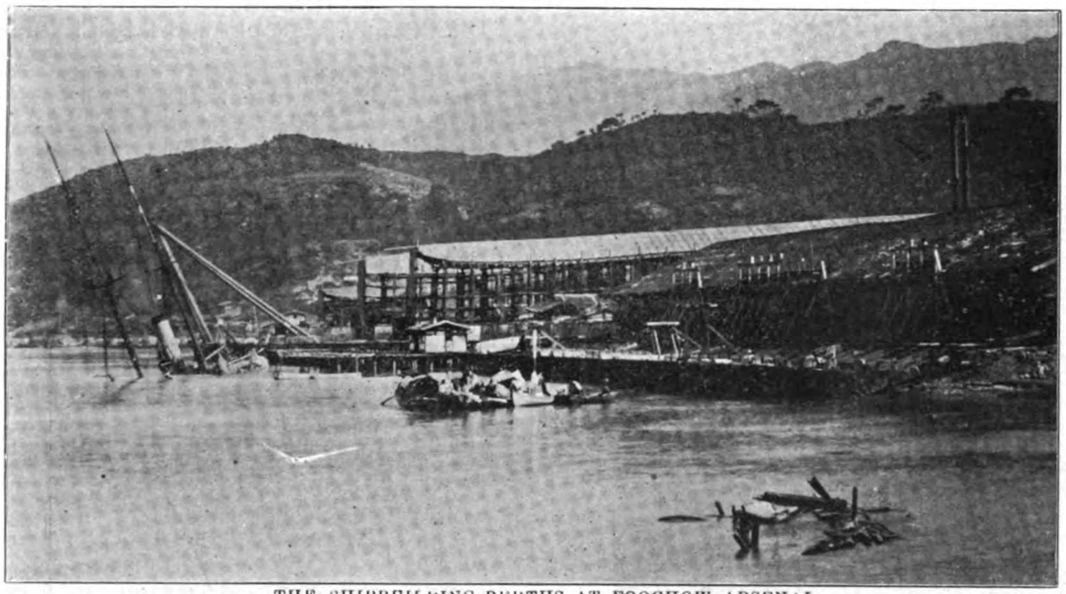
This vessel is 240 feet in length with a 42 foot beam and draught of 10 feet loaded. She makes 13.5 knots an hour; is equipped with twin screws, and built of steel throughout. Electric light is installed and every modern convenience provided in her appointments. This gives an idea of the growing capacity of the dock to turn out modern work and with the proposed reorganization and the expenditure of large sums of money in expansion by the Federal Government, the Arsenal and Dockyard promise to take a prominent part in the development of China's navy and merchant marine.

THE WHAMPOA DOCK AND NAVY YARD

The Whampoa Dock and Navy Yard Naval Yard is about all that remains at Whampoa of any special interest, but its importance must not be overlooked for the reason that it is the naval headquarters for the South China Gunboat squadron where all the repairing is done. It is also the location of the Government torpedo school.



THE SHIPBUILDING BERTHS AT FOOCHOW ARSENAL



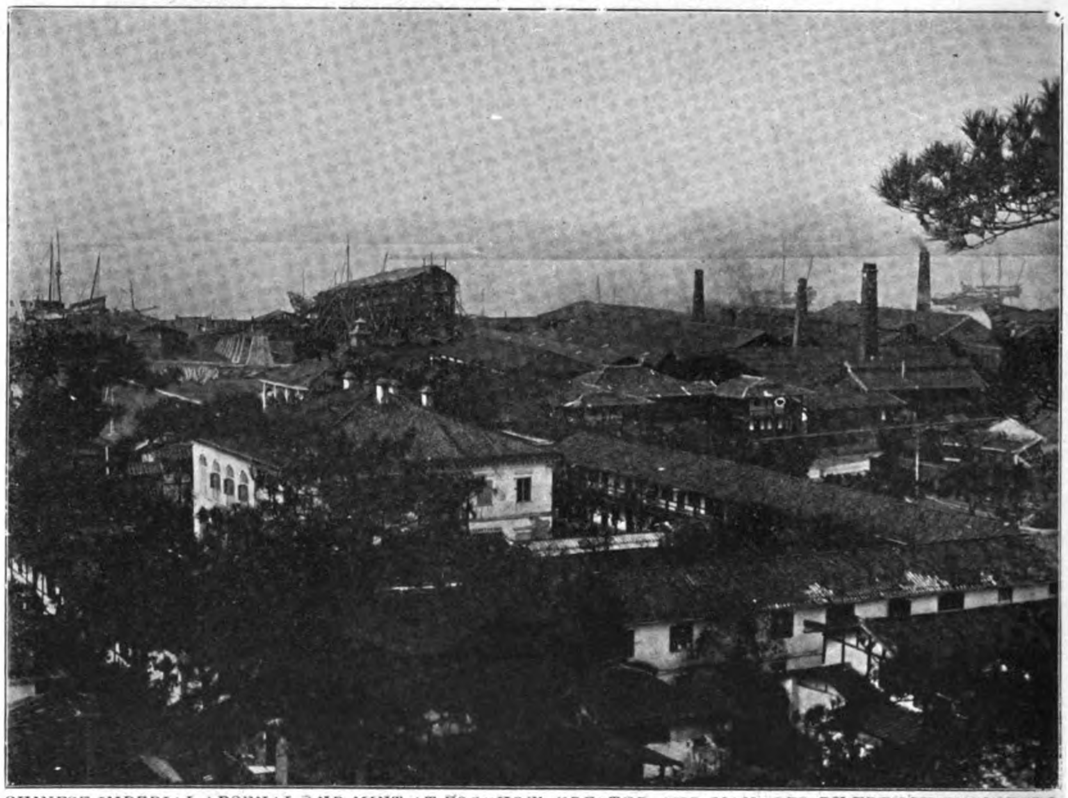
THE SHIPBUILDING BERTHS AT FOOCHOW ARSENAL

There were mud docks at Whampoa owned by Chinese long before Hongkong became a British port. They were utilized for the repair of sailing craft in the early days of the shipping trade, but foreigners were not satisfied with the facilities or the supervision of the repairs by Chinese and finally the P. & O. paved the way for foreign supervision by arranging that Mr. John Couper should supervise all the work done on the company's vessels. Later Mr. Couper leased the mud docks and added the Couper Dock which was much larger and built on more modern lines. In the clash over the Lorcha Arrow Affair between the British and the Chinese, the latter destroyed the Couper Dock in part and Mr. Couper was kidnapped. In 1863 Couper's son, who secured part of the indemnity for his losses, sold his interest in the Couper Dock to Messrs. Douglas, Lapraik & Co. and the Hon. Thos. Sutherland. This transaction initiated the formation of the present Hongkong & Whampoa Dock Co. Ltd. The mud docks which were included in this sale were resold to the Chinese Government and with some improvements since added are now known as the Whampoa Dock and Naval Yard. It is expected that the Chinese Federal authorities will provide funds for the extension and further modernizing of this station when the reorganization of the navy is under way.

W. S. BAILEY & CO.

This firm of engineers and shipbuilders was founded at Hongkong in 1897 by Mr. W. S. Bailey, who began business as consulting engineer and importer of engineers' requisites. In 1900 Mr. Bailey was joined in partnership by Mr. E. O. Murphy, and the present works at Kowloon Bay were established.

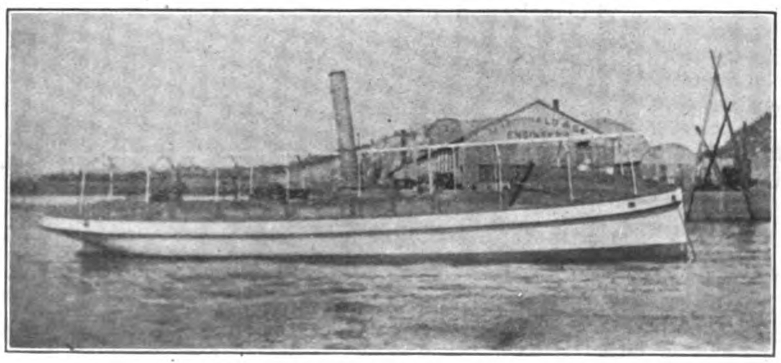
The works occupy about six acres, and have a sea frontage of 450 feet, so that eight vessels may be laid down at the same time. When established only three years, the company received the order for the Canton River steamer Kwong Chow (now the Kwong Sai) of 600 tons displacement and 200 feet in length. The boat was completed a year later, and up to that date was the largest steel vessel built in the Colony. In 1905 the firm undertook the construction of the steel twin-screw steamer the Kwong Tung, the steel cruiser Loong Sheung (Flying Dragon) for the Imperial Chinese Navy, a steel twin-screw lighter, a steel oil barge 150 feet in length for the Standard Oil Company of New York and the steel buoys for the Manila Government. The firm erected large oil tanks at Haiphong and Saigon for the Standard Oil Company, and similar installations at Hongkong. In seven years the firm have turned out over eighty vessels, including sternwheelers, light draught vessels, and motor boats both twin and single screws.



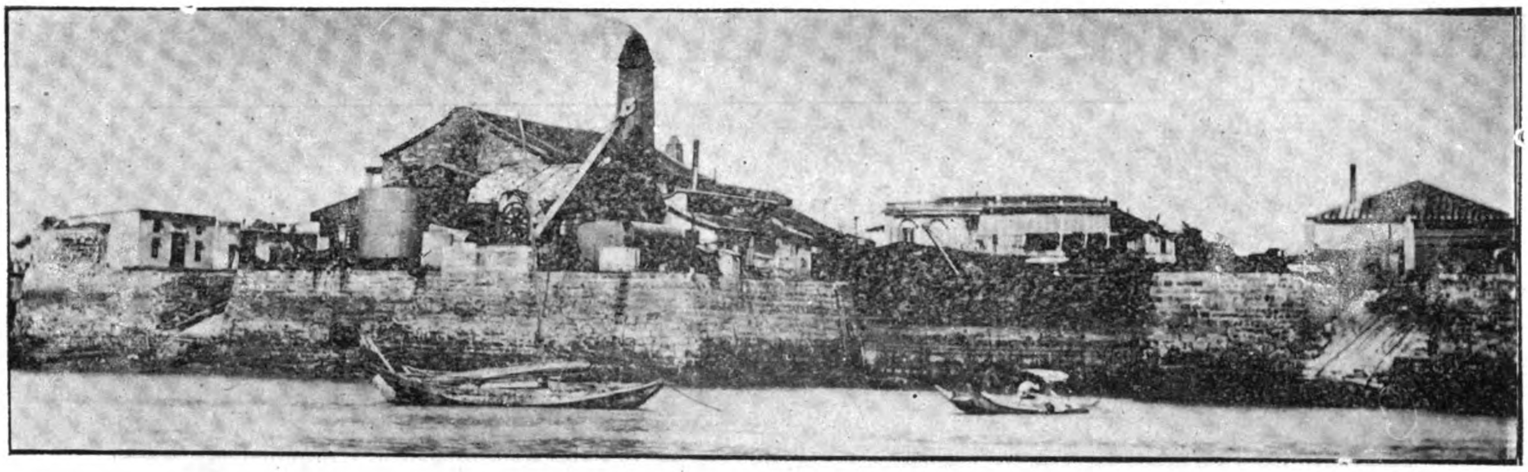
CHINESE IMPERIAL ARSENAL AND MINT AT FOOCHOW, ERECTED AND MANAGED BY FRENCH ENGINEERS, EQUIPPED THROUGHOUT WITH FRENCH MACHINERY. A YANTSZE RIVER STEAMER ON THE WAYS UNDER CONSTRUCTION.

MACDONALD & CO.

One of the leading engineering firms of Hongkong is that of Messrs. Macdonald & Co., who were the first to undertake the construction of steel piers and wharves. The firm was formerly known as Kinghorn & Macdonald, but in 1903 it was established under its present style. The offices of the Company are in York Buildings, Hongkong, and the works are at Kowloon. The equipment of the works enables all classes of harbor and repair work and the construction of marine engines up to 200 horsepower to be carried out. The site occupied forms part of the land that has been reclaimed in the bay, and adjoins the Kowloon-Canton Railway station yard. It has a good water frontage of 400 feet in length, and a slipway capable of taking vessels up to 150 tons. The firm has carried out a large number of important contracts, including the building of wooden and steel lighters, steam launches, steel jetties and steel piers at Canton (one for the Hamburg-Amerika Linie), the principal workshops at Messrs. Butterfield & Swire's new dockyards at Quarry Bay, two piers at Tai Kok Tsui for Messrs. Arnhold, Karberg & Co., and a pier for the Standard Oil Company at Lai-chi-kok. Under contract with the Government, the firm also built Blake Pier, Hongkong's principal landing place. They removed



STEAM LAUNCH "HARBOR NO. 1," FOR MANILA, BUILT BY MACDONALD & CO.



GENERAL VIEW OF THE NEW AMOY DOCK CO.'S PROPERTY

the stone barriers in the Canton River which were put down during the first war to prevent foreign ships from entering the river, and, under contract with the Imperial Maritime Customs, constructed several lighthouses in the Canton and West Rivers. After the great typhoon of September, 1906, they were called upon to repair many of the lighters and launches that had suffered damage.

Mr. Donald Macdonald, M. I. Mech. E., M. I. M. E., the head of the firm, has had a long and valuable training in various engineering works. He is surveyor to the Bureau Veritas, British Corporation, and other registers.

Among the recent important construction by Messrs. Macdonald & Co. was the steam launch "Harbor No. 1" built for the Philippines Custom Service which suffered from an accident while proceeding under its own steam to Manila through the carelessness of the engineer. This vessel is 62 feet over all; beam, 11 feet; depth moulded, 6 feet. The boiler is 6 feet in length and 5 feet 9 in. in diameter, working pressure 150 lbs. per sq. in. It supplies steam to a set of compound surface condensing engines having diameter of cylinders 8 in. and 16 in. with 10 in. stroke. This vessel was given exhaustive and satisfactory trials in the presence of the Supervising Inspector of Machinery of the Insular Bureau of Customs and accepted before it left for Manila. The statement of A. Gillan, Master Mariner who was in charge of the launch on the voyage, is conclusive that the engineer had by his carelessness ruined the boilers and when he discovered the seriousness of his fault jumded overboard. No fault can be charged to the construction or installation.

Another important feature of this company's activity was the construction of an oil lighter with a capacity of 120 tons of oil in bulk now employed in the local Hongkong and Canton trade. The dimensions are: Length over all, 97 feet; beam, 18 feet; depth moulded, 6 feet. The motive power is generated by a 76 b. h. p. Kromhout marine type twin cylinder kerosine engine. On this vessel's first trip to Canton fully loaded a mean speed of 7.5 knots was attained, one-half knot more than her estimated speed. A powerful three throw pump is installed for dealing with the cargo and is driven by a belt from the crank shaft of the motor.

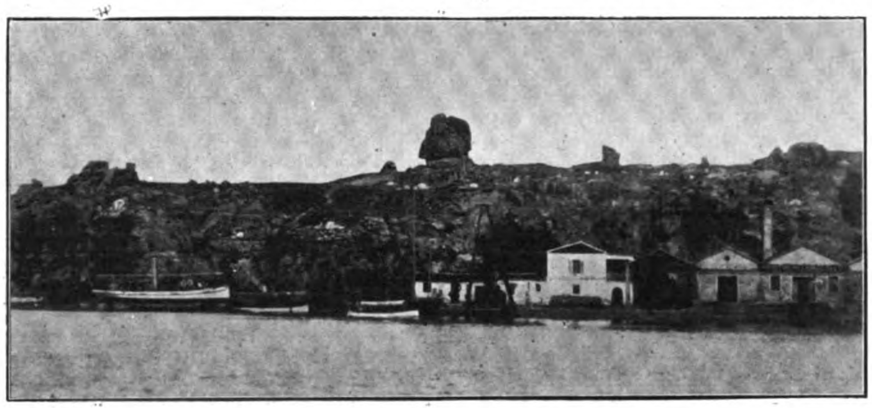
Besides this firm's shipbuilding activity it has secured the contract for the construction of the Swatow water works and is now doing the preliminary work on this project.

THE NEW AMOY DOCK COMPANY, LTD.

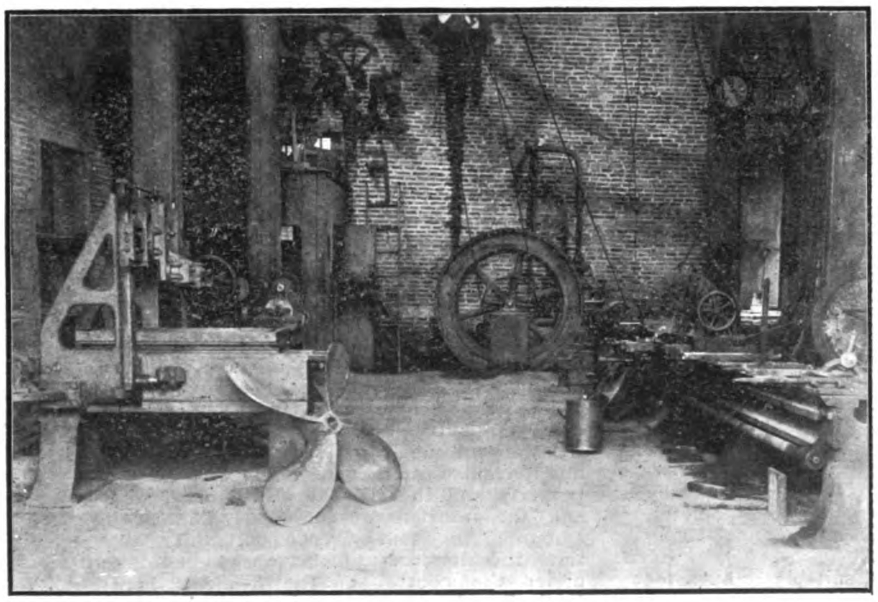
The dock owned by the New Amoy Dock Company has been in existence since 1858, but the Company, as at present constituted, was floated in 1892, being registered in the British Colony of Hongkong with a subscribed capital of $67,500.

Since that time nearly $100,000 have been invested in new machinery and upon improvements to the property.

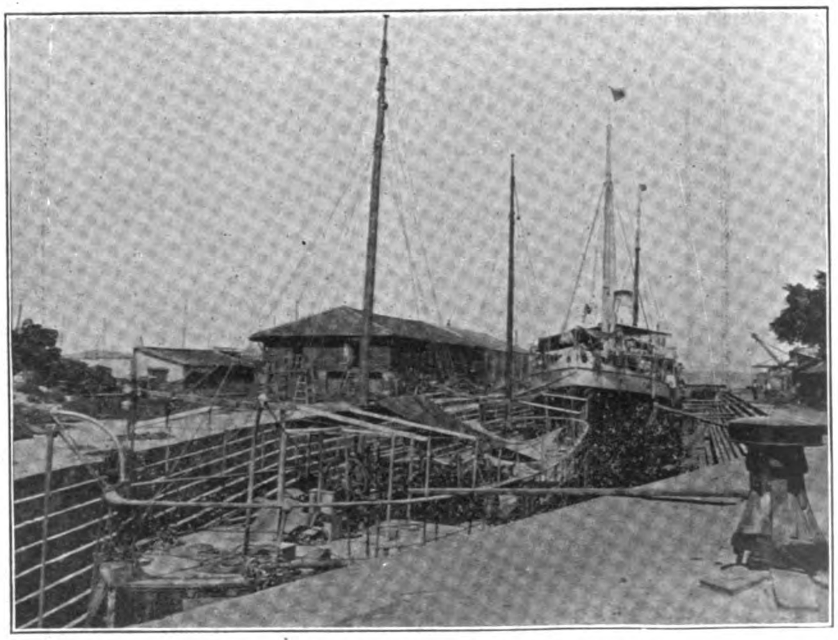
The company carries on the business of marine, mechanical, and electrical engineers, shipbuilders, boiler-makers, and iron and brass founders. They possess a well-constructed granite dry dock, capable of taking vessels up to 310 feet between perpendiculars; machine shop, foundry, boiler shed, smithy, and carpenters' shed, equipped with modern machines;



AMOY ENGINEERING WORKS

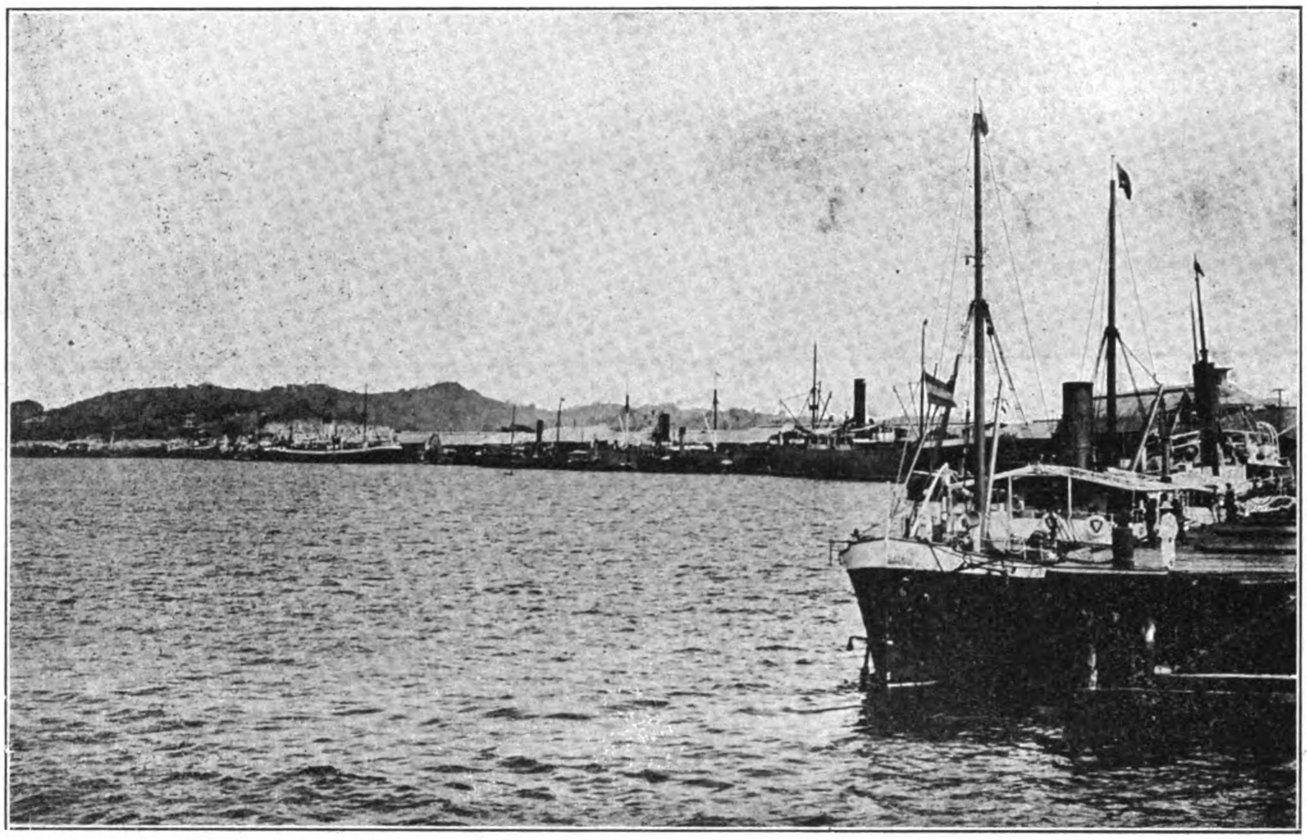


AMOY ENGINEERING CO.'S WORKSHOP



GRANITE DOCK, OF THE NEW AMOY DOCK CO.

THE TANJONG-PAGAR DOCK BOARD



GENERAL VIEW OF THE TANJONG-PAGAR DOCK WHARVES

This government institution succeeded in 1906 to the property of the Tanjong Pagar Dock Company of Singapore and extensive plants including harbor work and dockyard extension placed under its direction. Among the important works included having reference to Far Eastern Shipbuilding was the construction of a new dock 860 feet in length, with at entrance 100 feet, and depth, 35 feet, in addition to four large graving docks then in operation. Besides the docks the Board controls the Tanjong Pagar Wharf two miles in length and the Keppel Harbor Wharf 300 feet long. These wharves are equipped with powerful sheers and cranes with lifting capacity] of 45 tons. Bodegas with a capacity of over 300,000 tons are provided for cargo. The equipment for salvage work is very comprehensive and a fleet of tugs, launches and lighters is engaged in the service of the Board.

The following is a description of the docks and shipbuilding yards of the Board:

Graving Docks.—Victoria Dock (Tanjong Pagar), opened in 1868, was built of granite. It is 450 feet long, 65 feet wide at the entrance and has 20 feet of depth in water on the sill at highest Spring tides.

Albert Graving Dock.—(Tanjong Pagar) was opened in 1879 and is constructed of concrete. Its length is 480 feet; width 60 feet at entrance and its depth 21 feet on the sill at highest Spring tides.

No. 1 Graving Dock (Keppel Harbor).—Opened in 1845 and constructed of granite; 415 feet in length; 42 feet wide at entrance; depth, 15 feet on the sill at high water tides.

No. 2 Graving Dock (Keppel Harbor)—Opened in 1869 and constructed of granite; 444 feet in length; 65 feet wide at entrance and 19 feet in depth on the sill at highest spring tides.

Graving Dock (Prye, Province of Wellesley).—This dock is 340 feet long, 50 feet wide at the entrance with a depth of 15 feet on the sill at Spring tides; also Patent Slip at Prye is capable of accommodating vessels up to 110 feet on the keel.

In addition to these docks there is now a new dock 860 feet in length. All the docks are equipped with powerful centrifugal pumps and may be emptied in from two to four hours as required. The workshops fitted with steam and hydraulic machinery of the most modern type and equipped with every description of tools required for the construction and repair of ships and machinery, adjoin the several docks.

Machine Shops.—The machine shops are fitted with a large variety of modern labor-saving appliances. The lathes are capable of boring cylinders 100 inches in diameter, turning pistons 9 feet in diameter, and shafting up to 45 feet in length.

Each department has suitable cranes for handling weights, with every appliance required for the efficient and expeditious construction or repair of hulls and machinery of iron, steel, or wooden vessels.

Extensive Blacksmiths' shops adjoin the machine shops, with appliances capable of making forgings for crank shafts of 12 inches in diameter, and welding shafting up to 11 inches in diameter.

The Foundries are fitted for making every description of iron, brass and bronze castings, propellers and cylinders up to 10 tons in weight.

The boilermaking shops are fitted with the latest hydraulic machinery, overhead travelling cranes, &c., capable of constructing boilers up to 50 tons.

Repairs to boilers are executed with the utmost despatch. Hydraulic jacks to lift 150 and 300 tons, suitable for raising the furnace crowns of marine boilers, are part of the equipment.

Telephone Service.—Every section of these gigantic works may be reached by telephone, instruments having been installed in all the wharves, docks and offices and the system is made available to the public without charge.

Shipbuilding Yards.—These yards are suitable for building steel, iron, composite or wooden vessels of any size, and the Board will furnish plans, specifications, and all requisite information on application. There are a number of steam launches always in course of construction, ready for completion at short notice.

The development of this splendid system of docks, so closely identified with the history of Singapore, originated in the early enterprise of the Tanjong Pagar Dock Company. The original premises of the company were situated about a mile westward of the city, but in 1900 the company purchased the property of the New Harbor Dock Co. situated about three miles farther westward of the city. In 1904 the government decided to take over the whole of the property and in 1906 the award was made and the transfer consummated. The award amounted to about £3,000,000. Since that time the direction of the docks has been under the control of the Tanjong Pagar Dock Board.

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and a 20-ton crane on the sea-wall for the handling of heavy substances. Among the machines are a plate-rolling machine, capable of rolling plates up to $18\frac{1}{2}$ feet; a punching and shearing machine, which can take $1\frac{1}{4}$ inch plates; and some up-to-date lathes, upon one of which the largest tail-shaft can easily be manipulated.

The company can undertake pratically any repairs which coastwise shipping may demand. It has been fairly successful, from a financial point of view, from the start, and its future prosperity seems to be assured.

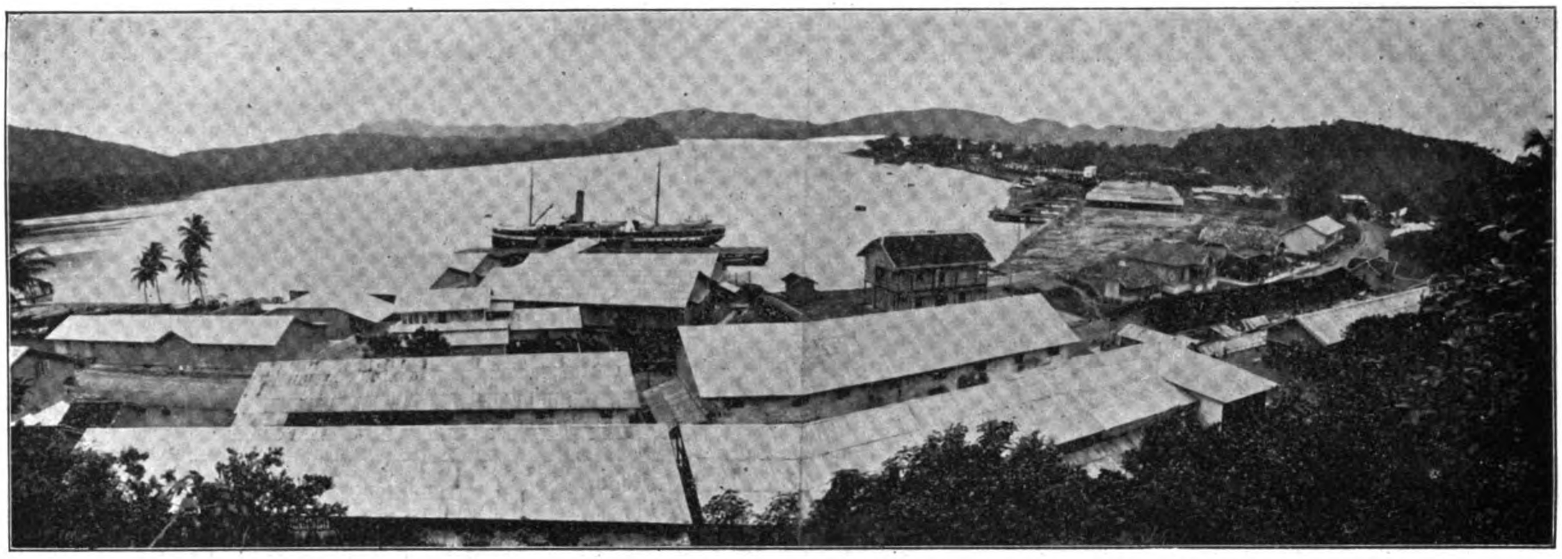
The works are superintended by Mr. Robert W. Black, an engineer possessing a wide and varied experience.

THE AMOY ENGINEERING COMPANY, LIMITED

Chinese capital controlled and directed by a British engineer is the combination behind the Amoy Engineering Company, Ltd., of Kulangsu, Amoy.

The undertaking was registered in Hongkong, in 1893, as a limited liability company, with a capital of $30,000. The Company builds and repairs launches, repairs steamers in harbor, and does general engineering work. Its slip for building launches, tugs, etc., is 110 feet in length, and its patent slipway 290 feet. It has also a double-power capstan, and sheers capable of raising anything up to ten tons.

The managing director and superintendent of the works is Mr. J. D. Edwards.



GENERAL VIEW OF THE PORT OF SABANG, UNDER CONTROL OF THE SABANG BAY HARBOR AND COAL COMPANY

SABANG BAY HARBOR & COAL CO.

Up to about 1893, Sabang Bay, in Sumatra, and the Island of Pulo Weh, in which the harbor is situated, was inhabited by only a small number of natives. In this year the advantage of Sabang as a base for the numerous Dutch gunboats, etc., then occupied in subduing the Achinese, became recognized, and with this in view a workshop fitted for ordinary repairs to steamers was erected, and a Government floating dock with a lifting capacity of 3,000 tons was installed, and is in use at the present time. It is only, however, within the last five or six years that the situation of Sabang as a port of trans-shipment for the rapidly-growing trade of the northern part of Sumatra, and as a coaling port for steamers proceeding through the Straits of Malacca, has been appreciated.

From the inception of its commerce, the Port of Sabang has been under the control of a private concern. The Sabang Bay Harbor and Coal Company, which, under the immediate auspices of the Netherlands Trading Society, has shown commendable energy in pushing the fortunes of its undertaking. This private company has built the entire stretch of wharves which now line a large part of the bay, from its own funds without Government subsidy.

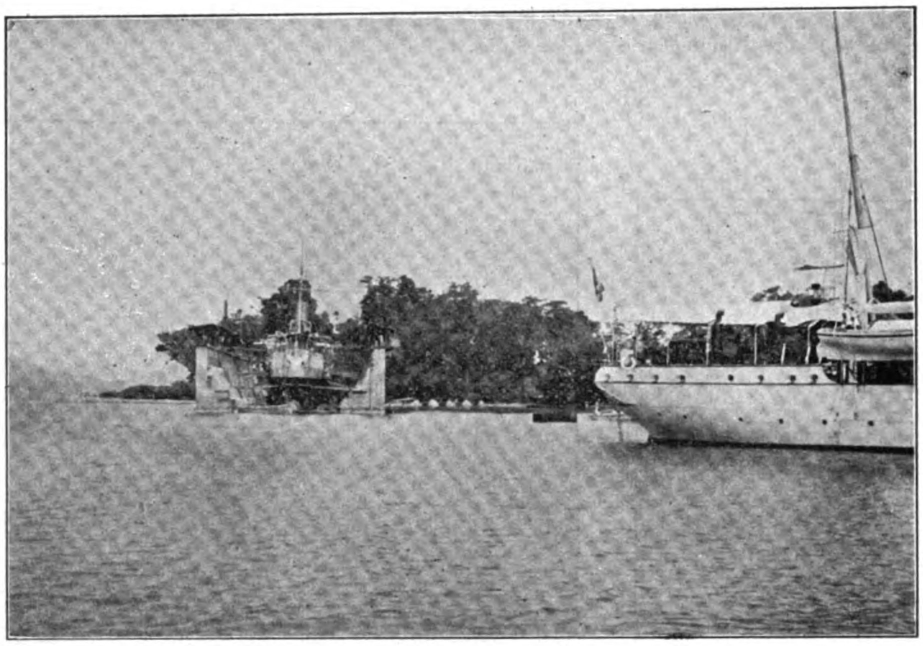
As a coaling port, the geographical position of Sabang brings it in the track of all vessels proceeding to or returning from the Far East, either *via* the Suez Canal, or the Cape of Good Hope.

The company has installed a plant consisting of four electric transporters, each weighing 120 tons, running on rails all along the numerous coalsheds, 24 in number, and when discharging a cargo, iron buckets containing 25 hundredweight of coal are filled in the holds of the colliers, thence lifted and carried by travellers above the sheds from which points they are lowered through hatches and automatically capsized upon touching the coal heap.

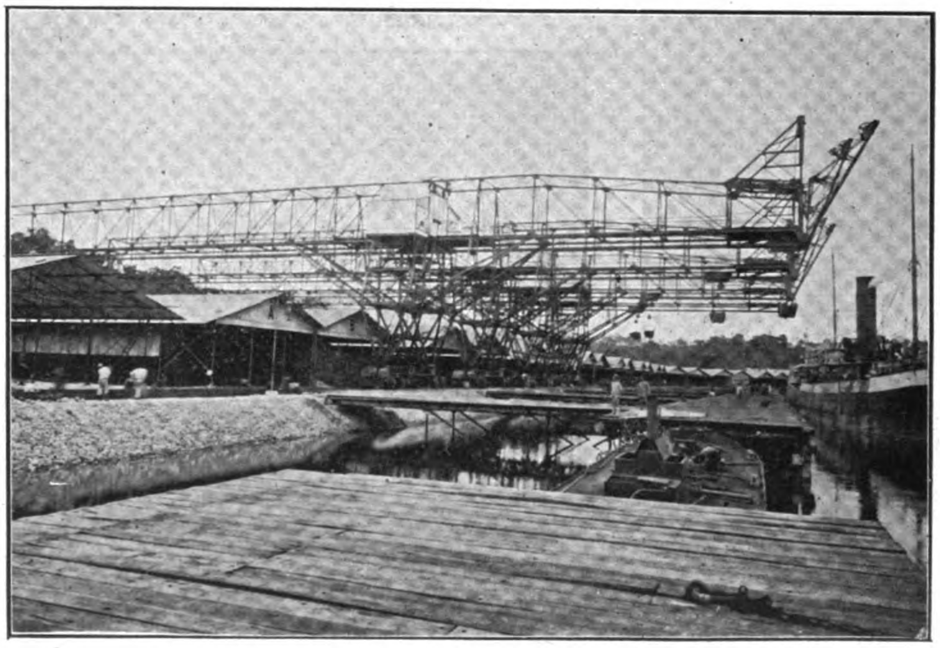
In the reverse operation of bunkering, buckets are also used wherever possible, but owing to the construction of steamers it frequently happens that part, at any rate, of the coal must be placed on board with baskets. In such cases the baskets are filled in the sheds and carried on board by the travellers where they are deposited in the most suitable spot for the completion of the operation by the force of coolies employed by the company.

These transports have now been in use for more than two years, during which time they have worked to the satisfaction of the company, and also to the satisfaction of the steamship owners using the port, who have benefited by the quick despatch obtained.

The company has from the first made no charge for harbor dues, pilotage, etc., on steamers calling for bunkers, all such charges being invariably included in the prices quoted for coal. This absence of charges involves also a complete absence of many of the formalities and petty delays so irksome to captains and owners.



FLOATING DOCK AT SABANG BAY



BUNKERING PLANT AT SABANG BAY

RILEY, HARGREAVES & CO., LTD.

The firm of Riley, Hargreaves & Co. was originally started in quite a small way as far back as 1865, and has since developed into one of the most noteworthy concerns of its kind in the Far East.

It was converted into a Limited Liability Company in 1899, with a capital of $1,000,000.00, Straits currency. It possesses branch works and establishments in the five leading towns of the prosperous Federated Malay States, and has agencies throughout the neighboring Dutch Islands, Siam, Indo-China and the Philippines. The company is in the unique position of owning the only privately managed ship building yard in Singapore.

Its shipbuilding establishment is situated on a spit of land known as Tanjong Rhu, about three miles from Singapore town, with a frontage to the sea on the East side and facing the mouth of the Gaylang River on the West side.

On the East side there are three slips, the largest of which is capable of taking vessels up to 170 feet, there is also a wharf and steam sheerlegs with a lifting capacity of 40 tons. On this side is an extensive saw mill fitted with modern labor saving machinery, and large stocks of selected teak and other hardwoods all ready seasoned and fit for immediate use are stored.

On the West side there are 10 berths suitable for building ships in steel or wood from 30 to 300 feet long. There are also the well equipped blacksmiths', boilermakers' and fitting shops well stocked stores, and the moulding loft.

The yard is under skilled European supervision and the work turned out compares favorably with that of home establishments.

Riley, Hargreaves & Co., Ltd. are at present devoting much attention to the design and construction of motor lighters, river launches and stern wheel steamers, which are in great demand by the many rubber companies whose properties are situated in places only accessible by water.

Among vessels built and engined by the Company may be mentioned the "Seamew" (the steam yacht built for the Governor of the Straits Settlements), length 197 feet, Engines of Triple Expansion Condensing Type 15", 25" and 40"×24", and the "Sarie Borneo" length 195 feet, Engines of Triple Expansion Condensing Type 17", 27", and 43"×33".

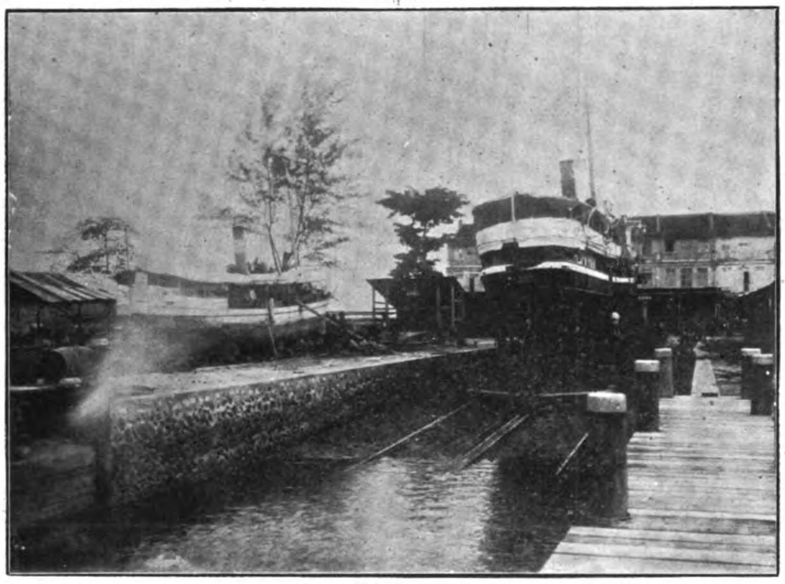
In addition to its shipbuilding business the firm has separate departments and establishments in which are carried out civil, mechanical and electrical engineering.

The town stores situated in Battery Road are replete with every class of ships' and engineering stores, and captains or owners of vessels calling at Singapore may confidently rely upon their requirements being fulfilled with promptitude and despatch.

The firm's launch meets each incoming steamer, and special attention is paid to any commands entrusted to its representative.

The electrical department have installed complete plants in several of the local steamers, and it speaks well for their knowledge of tropical conditions that not a single repair or alteration has been made since the plants were handed over, a great difference from the installations which have been sent out by home makers, as specially prepared for the tropics, and which require considerable tuning up before they are satisfactory.

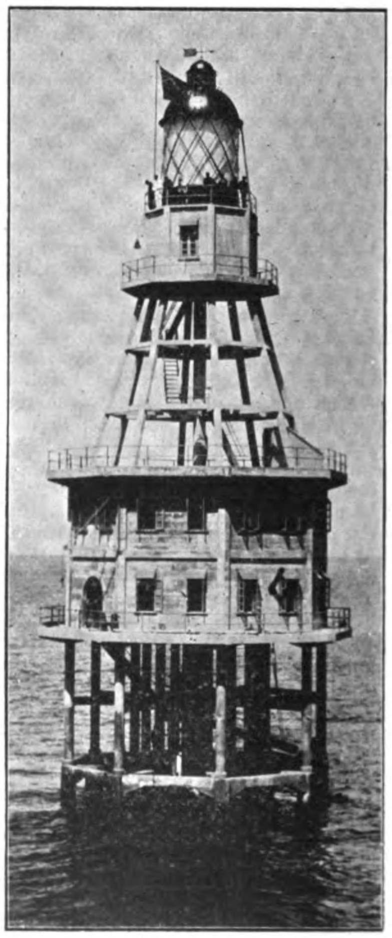
The Civil Engineering Department recently carried out the construction of a Ferro Concrete Lighthouse at One Fathom Bank, Straits of Malacca, which is believed to be the only one of its kind, built in the sea, in the world. Other work in hand includes wharves for the Siamese States Railways in the territory recently ceded to Great Britain, and the laying of a large gravitation main in connection with the new water works scheme for Singapore.



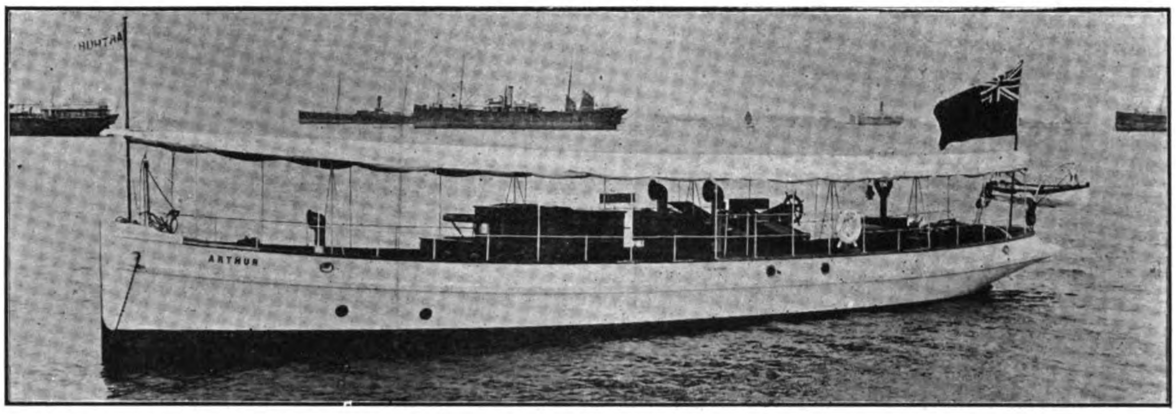
VESSELS ON COMPANY'S SLIPWAY

STEEL LIGHTHOUSE AT FORT CANNING, OVERLOOKING THE HARBOUR OF SINGAPORE. HEIGHT FROM GROUND TO FOCAL PLANE, 58 FEET. BUILT FOR THE COLONIAL GOVERNMENT S. S.

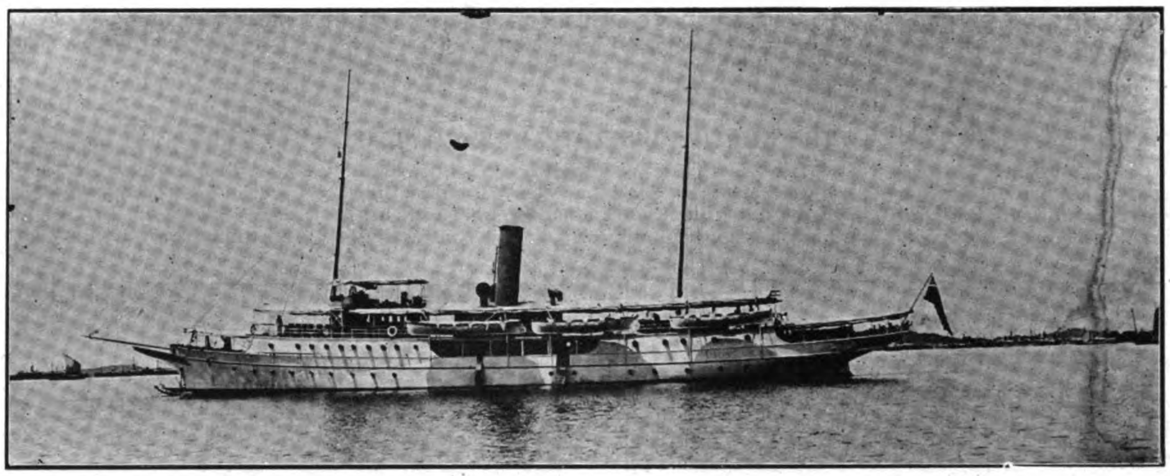
FERRO CONCRETE BRIDGE AT PANDAN, NEAR SINGAPORE. BUILT FOR THE COLONIAL GOVERNMENT S. S.



FERRO CONCRETE LIGHTHOUSE AT ONE FATHOM BANK, STRAITS OF MALACCA. HEIGHT FROM H. W. L. TO FOCAL PLANE, 96 FEET. BUILT FOR THE COLONIAL GOVERNMENT, S. S.



MOTOR LAUNCH "ARTHUR," LENGTH 80 FEET, BUILT BY RILEY, HARGREAVES & CO. FOR THE ASIATIC PETROLEUM CO., LTD., SINGAPORE



COLONIAL YACHT "SEAMEW," 197 FEET LONG. BUILT FOR THE GOVERNOR OF THE STRAITS SETTLEMENTS

The engineering works at Kampong, Malacca, comprise boiler fitting and blacksmiths shops, foundry and erecting yard.

The boiler shop, the power of which is derived from a suction gas engine, has one of the most up-to-date hydraulic rivetting plants in the Far East, and in addition to manufacturing all classes of boilers, many miles of light steel tested pipe lines for use in the tin mines are turned out annually.

The fitting shops are equipped with modern machinery, the largest lathe being capable of turning shafts up to 30 feet long.

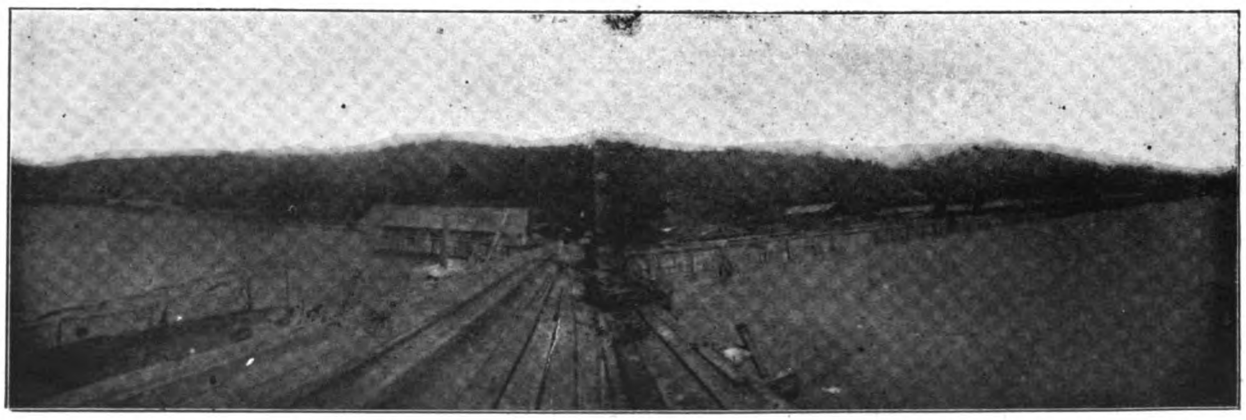
The blacksmiths shops have a full range of forges and steam hammers and all kinds of light and heavy work is undertaken.

The foundry has a capacity of single castings up to 10 tons and is under efficient European supervision.

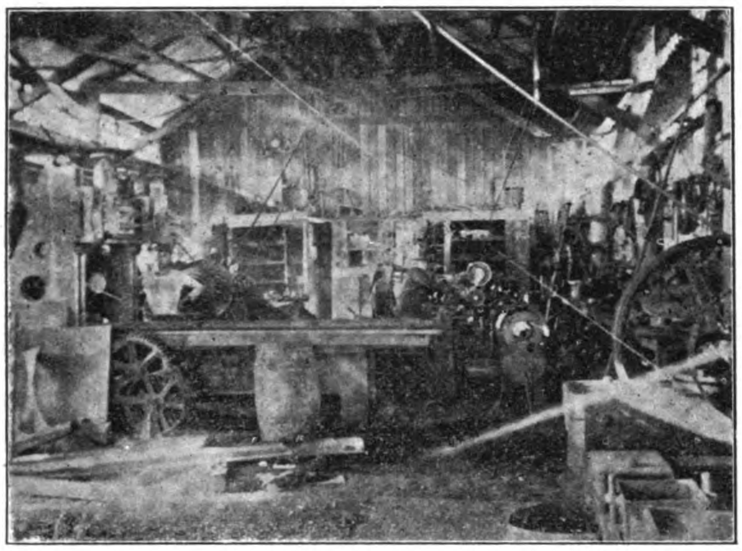
At the works, Kampong Malacca, are kept large stocks of iron and steel in all the British Standard Sections, tubes, contractors plant, mining and railway equipments, paints, oils and sundries.

They have made a speciality of rubber machinery and accessories, and are sole Agents for the well known firm of Bertrams Ltd., Edinburgh.

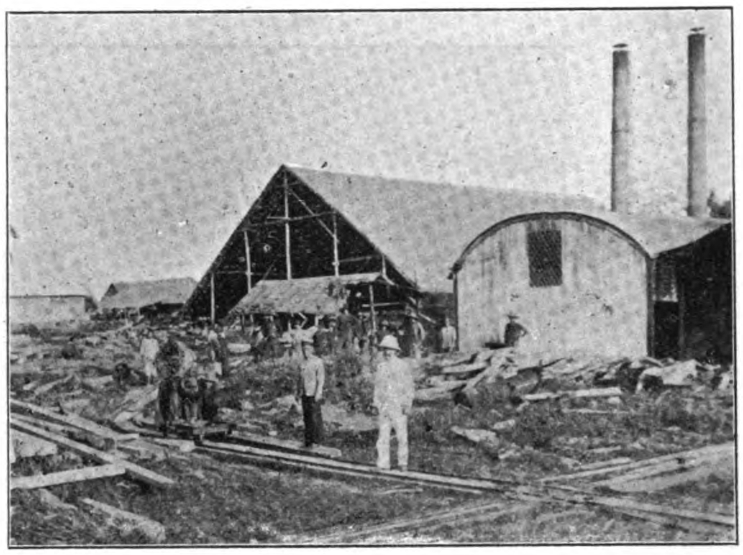
Large stocks are held of suitable sections in girders, angles and tees to meet demands for the supply of Rubber Factories, Drying Stores, smoke houses, coolie lines, bungalows, etc.



ROUGH TOP ENCLOSURE BETWEEN THE NORTH BORNEO TRADING COMPANY'S MILL AND OLD WORKSHOP, SAWMILLS, SHIPBUILDING SHEDS, OFFICES, ETC., IN THE BACKGROUND



NORTH END OF ENGINEERING SHOP



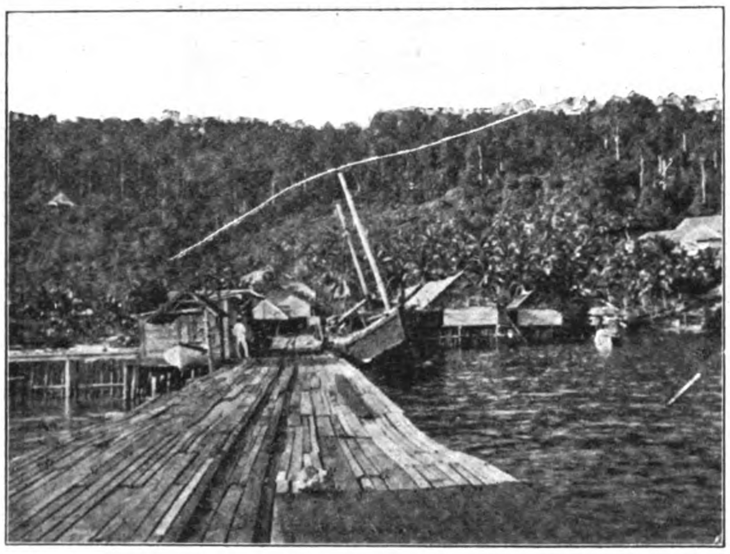
BOILER-HOUSE OF THE MILLS; SHIPBUILDING SHEDS, CORNER OF WORKSHOP IN THE DISTANCE

THE CHINA-BORNEO COMPANY, LTD., SANDAKAN

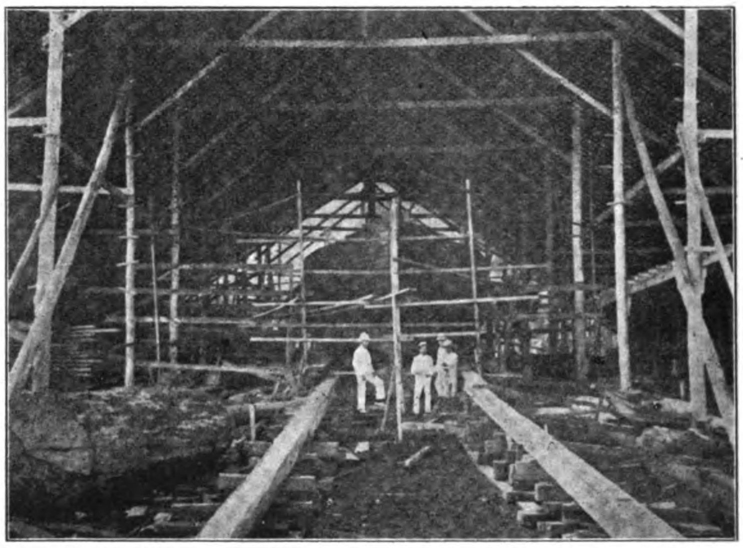
The China-Borneo Company, Ltd., was formed in 1888, but has been twice reconstructed. It has now a capital of $720,000 and has paid good returns to shareholders for years past. In Sandakan, Borneo, the Company has two large sawmills, as well as a patent slipway for vessels up to 800 tons and engineering shops. It does all its own repairs, lays its own jungle railways, builds launches and lighters, and does general engineering. The labor staff numbers about a thousand Malays and Javanese.

THE NORTH BORNEO TRADING CO., LTD.

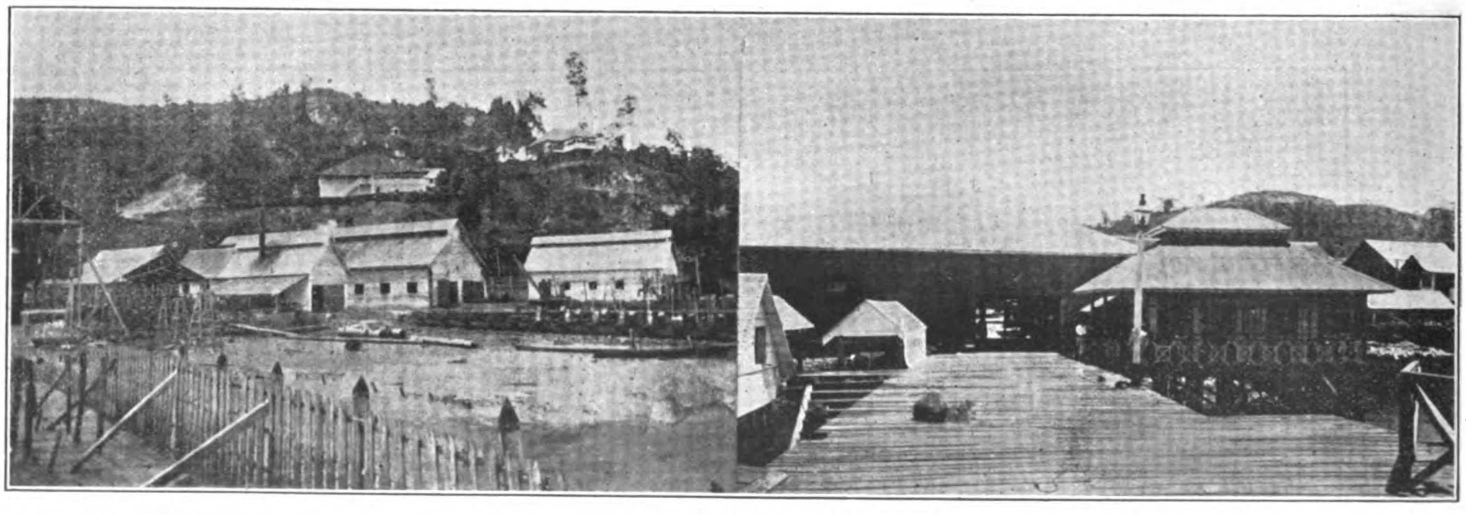
The North Borneo Trading Co., Ltd , with headquarters at Sandakan, besides controlling many departments of industry, engage in shipbuilding, general engineering and contracting. The shipbuilding yard is capable of turning out any kind of wooden vessel up to 500 tons and has turned out large numbers of steam launches, lighters and lorchas. All the machinery is imported from Great Britain. The workshop is up-to-date and engineering work of all kinds is carried on with dispatch. A certified engineer is in charge of the entire works. The company's plant is located inside Sandakan Bay and vessels drawing 18 feet may moor alongside the company's wharf.



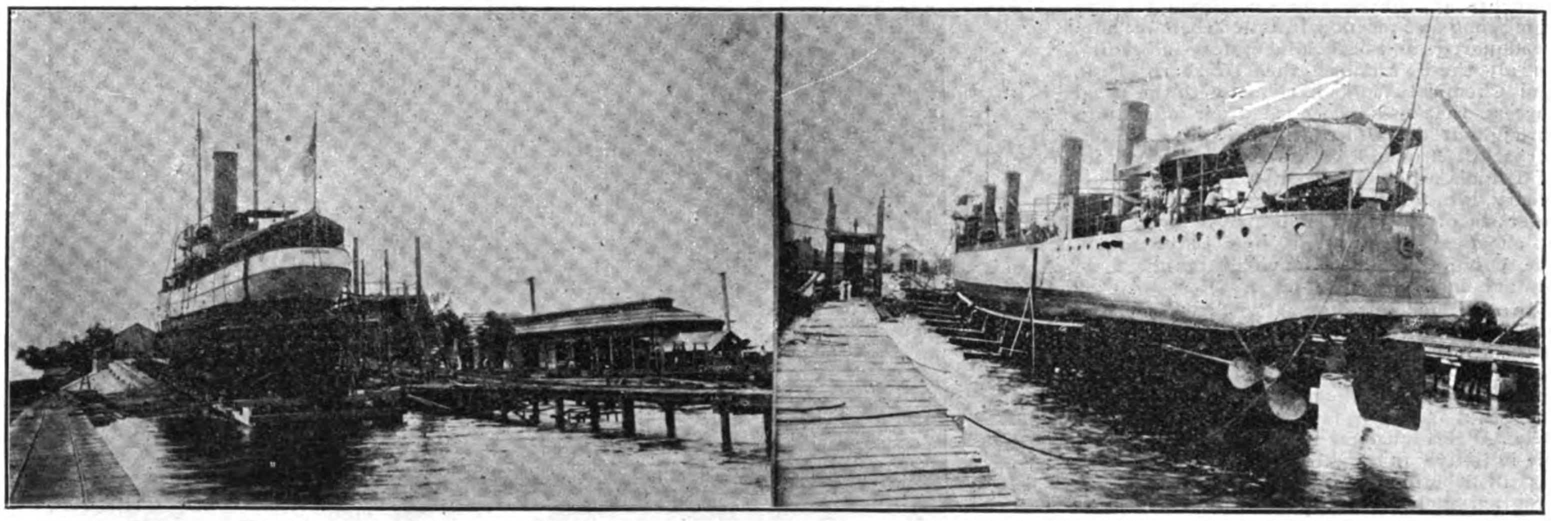
WHARF OF THE ENGINEERING SHOP



PREPARING TO LAUNCH A BIG LIGHTER

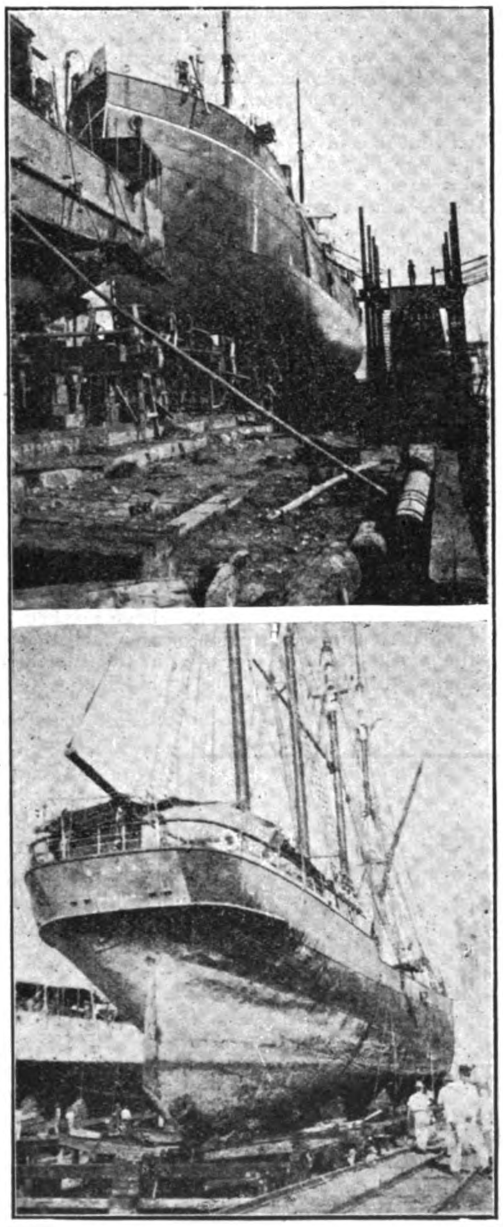


THE CHINA-BORNEO CO.'S PATENT SLIPWAY, SHIPBUILDING PLANT AND ENGINEERING SHOPS—SLIPWAY TAKES VESSELS UP TO 800 TONS ANY STATE OF TIDE.—VIEW OF THE CUSTOM HOUSE AND WHARF



U. S. S. "PISCATAQUA" AND TORPEDO BOAT "DALE" ON SLIPS

EL "VARADERO" DE MANILA



FOUR MASTED SCHOONER "ALTA" AND S. S. "MINAS DE BATAAN" UNDERGOING REPAIRS AT CAÑACAO

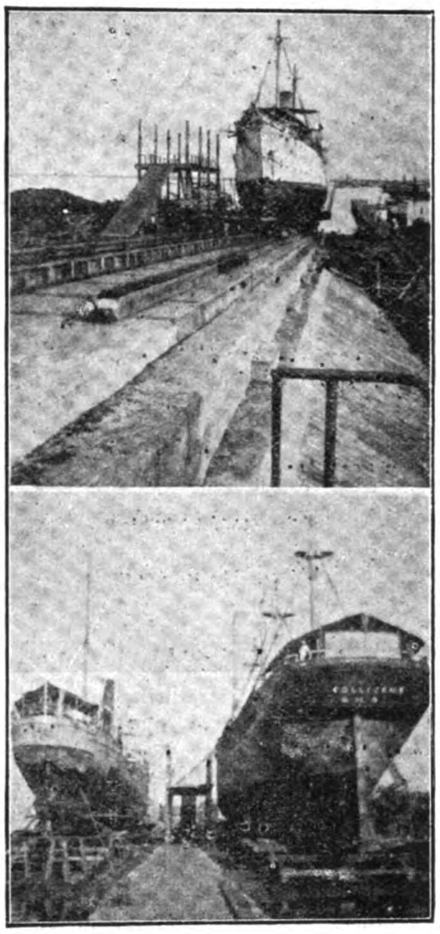
El Varadero de Manila is a limited liability company, established in the year 1884, being the oldest established in the Philippine Islands. The company possesses ship-yards, two marine railways and workshops situated at Cañacao, Cavite, capable of turning out vessels up to 2,400 tons gross register. The workshops consist of Machine shop, Foundry, Black-smith shop, Copper-smith shop, Boiler-shop, and Saw-mill, all fitted out with the most modern machinery. The firm is capable of undertaking ship-building, ship-repairs, tank construction work, etc., etc. The ship-yards and slip-way are situated in the Bay of Cañacao in close proximity to the historic battle field. The gun-boats "Callao," "Arayat," "Pampanga," "Samar," "Paragua," captured from the Spaniards by the U. S. fleet, were built by the Varadero company; and the "Callao" and "Samar" are still in service on one of the rivers of China.

The "Varadero" has proven its ability to handle its share of the government work, within its limitations, and the following war vessels have been successfully docked and repaired since the American occupation of the Islands: The United States ships "Wilmington," "Helena," "Petrel," "Castine," "Marietta," "Princeton," "Vicksburg," "Annapolis," and the captured gunboats "Isla de Cuba," "Isla de Luzon," "Don Juan de Austria," "Villalobos," "Elcano," "Quiros," "Pampanga," "Paragua," "Samar," "Callao" and "Arayat," also the large seagoing tug-boats "Piscataqua" and "Wampatuck." The transport "Pompey," "General Alava" and "Manila" have also been docked and repaired.

The gunboats "Pampanga," "Paragua," "Samar," "Callao" and "Arayat" were built for the Spanish Government during the years 1887 and 1888 at Cañacao, and the excellence of the work is attested to by the fact that the boats are still in service.

Besides the above mentioned gunboats, numerous small merchant vessels for the inter-island coasting trade, and lighters and cargo boats have been successfully built and engined from these shops. One of the gun-boats, the "Bulusan," constructed for the Spanish Government was destroyed and sunk by the insurgents. The company also built 12 steel and iron coal barges for the United States navy, shortly after the occupation, to the complete satisfaction of this exacting branch of our service.

The officers of the company are: General Manager, Rafael Reyes; Acting General Manager, Alfonso Rocha; Works Manager, Alexander Young Superintending Engineer, Chas. H. W. Aitken.



U. S. GEODETIC SURVEY STEAMER "FATHOMER" AND COAL HULK ON SLIPWAYS

MARINE BOILER WATER TREATMENT

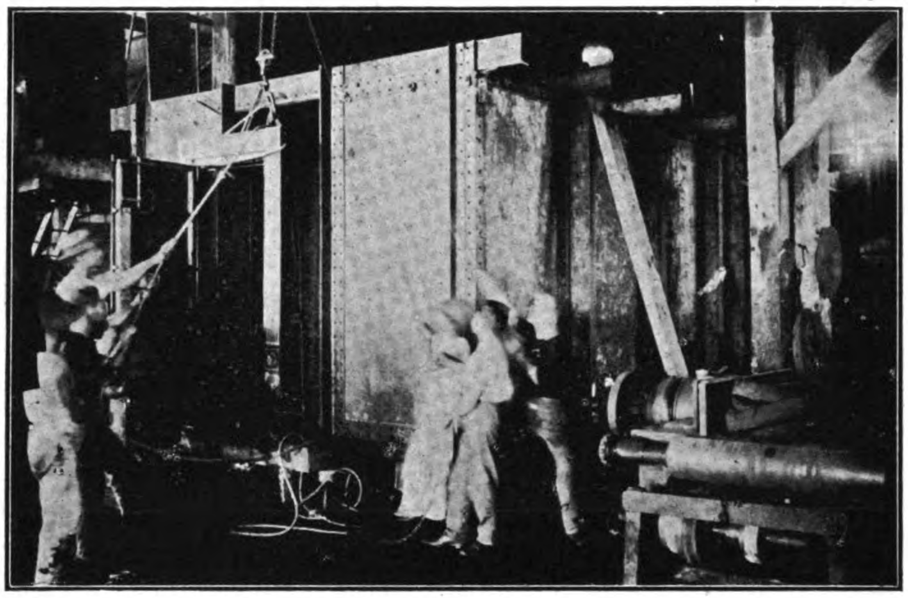
The invasion of Far Eastern territory by the Dearborn Drug and Chemical Works of Chicago in 1910 with their modern methods of treatment of feed water for all classes of boilers by intelligent application of the principles of chemistry instead of by the old "cure-all" preparations, together with their lubricants scientifically produced to give the best possible results, has been marked by the general appreciation of the shipping trade, manufacturers and other interests suffering from the serious depreciation of boilers from the action of salts and gases developed from the waters utilized. These works have established

branches at Tokyo, Tientsin, Shanghai and Hongkong and recently installed their oriental headquarters and branch laboratory in Manila. In all these sections the Dearborn Drug and Chemical Works have met with the usual success that has attended their operations throughout the United States and territories. Mr. E. C. Brown, a graduate of the University of Illinois where he took a course in Chemistry, is in personal charge of the Far Eastern interests of the firm and Mr. F. O. Smolt, a chemical engineer, is now in charge of the Oriental Headquarters and Branch Laboratory in Manila.

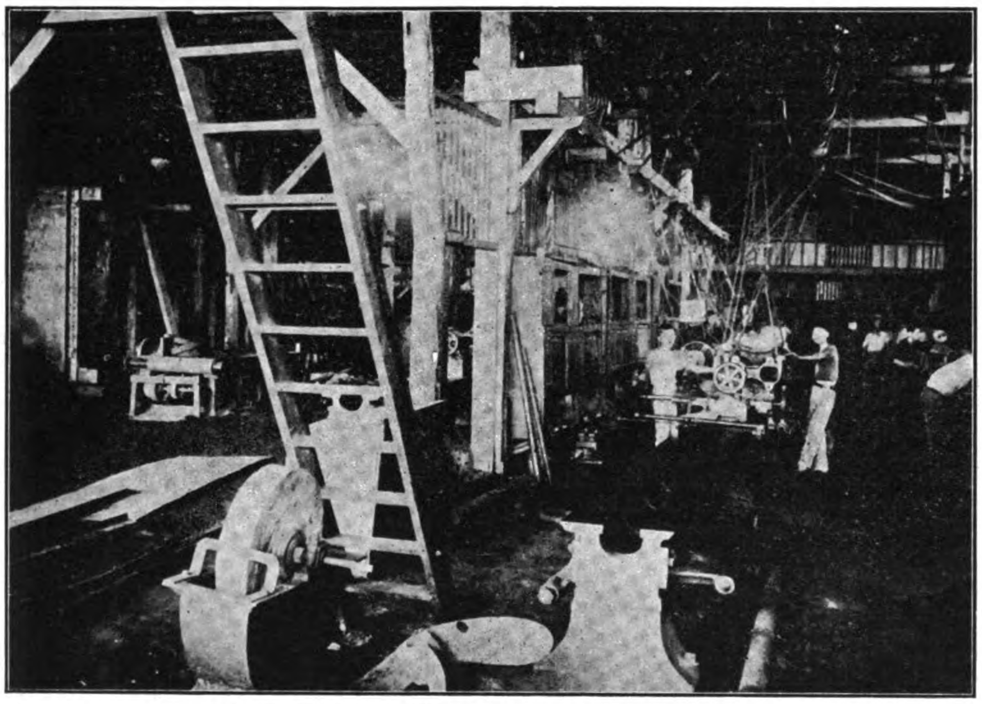
In all their operations the Dearborn Drug and Chemical Works include twenty-four active branches and they are naturally expansionists. The work of manager Brown in less than a year in the Orient has been most successful and with the establishment of the Oriental Headquarters in Manila, he is taking the initiative in making that American port his distributing center for the East. The program includes an invasion of the Straits and Federated Malay States extending the Dearborn circle of branches until no part of the globe is neglected.

Having special reference to Marine Boiler Water Treatment which is of the greatest interest to the extensive shipping interests of the Orient it may be noted that the Dearborn Drug and Chemical Works have given special attention to the treatment of waters used as supplies for marine boilers so as to prevent scale or incrustation and when it is remembered that a treatment satisfactory when applied to feed waters of one character would serve no good purpose if prescribed for another, the adaptation of treatment arrived at by careful chemical tests must appeal to those who have suffered from the "cure-all" faker who prescribes the one kind of treatment for all the different water defects.

The Works have a central laboratory in Chicago in connection with their manufacturing department and the former is to the latter what the prescription druggist is to the physician. In the laboratory samples of water are analyzed in order to combat successfully the evils of scale, deposit, priming, foaming, pitting, grooving, corrosion, etc. The Branch Laboratory in Manila will serve the same purpose for the Orient as the Chicago Laboratory for the United States. Mr. F. O. Smolt who is in charge is a chemical engineer, and thoroughly conversant with the company's methods and products. A large stock of lubricants is also kept in stock.



SAN NICOLAS IRON WORKS: STEEL SAFE DEPOSIT VAULT MADE FOR MORO PROVINCE



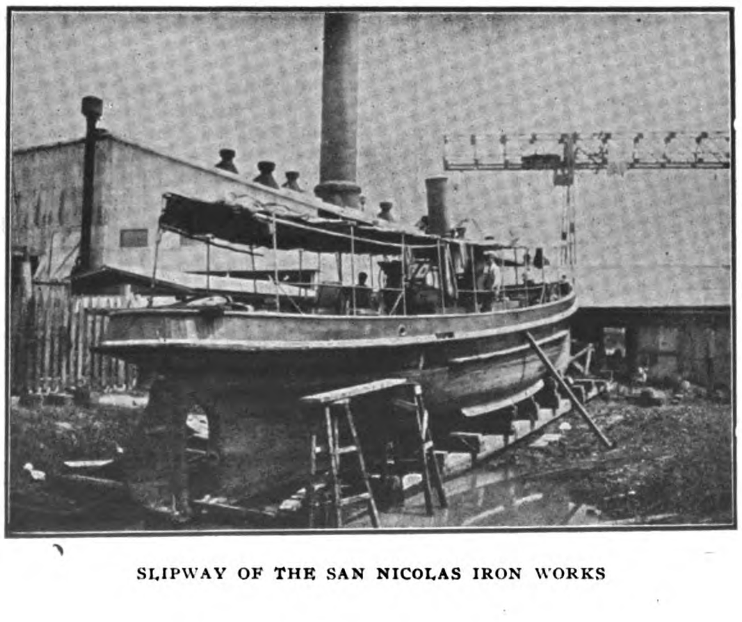
MACHINE SHOP OF THE SAN NICOLAS IRON WORKS

THE SAN NICOLAS IRON WORKS, LTD.

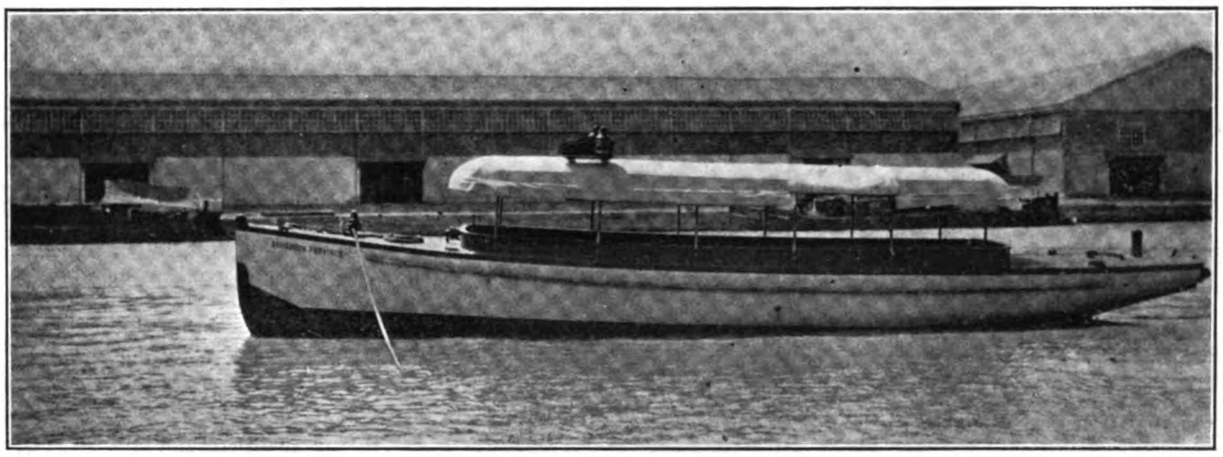
This company was organized in 1900 with a capital of ₱300,000 and established an up-to-date plant in San Nicolas district, Manila. Messrs. Smith Bell & Company are the General Managers and the enterprise has met with marked success from the beginning. The company has a large engineering repair patronage and its machine shops and foundry are capable of handling all classes of construction. In the shipbuilding department only small vessels are built and repaired, but as this class of vessels predominate in local shipping the slipway is rarely empty.

The foundry and machine shops are equipped with all the most modern facilities for expeditious handling of orders. Recently a two-ton casting was turned up on the lathes in these works for the Philippine Government, a most difficult undertaking for a plant of this capacity, but which was promptly and satisfactorily completed, reflecting great credit on the management.

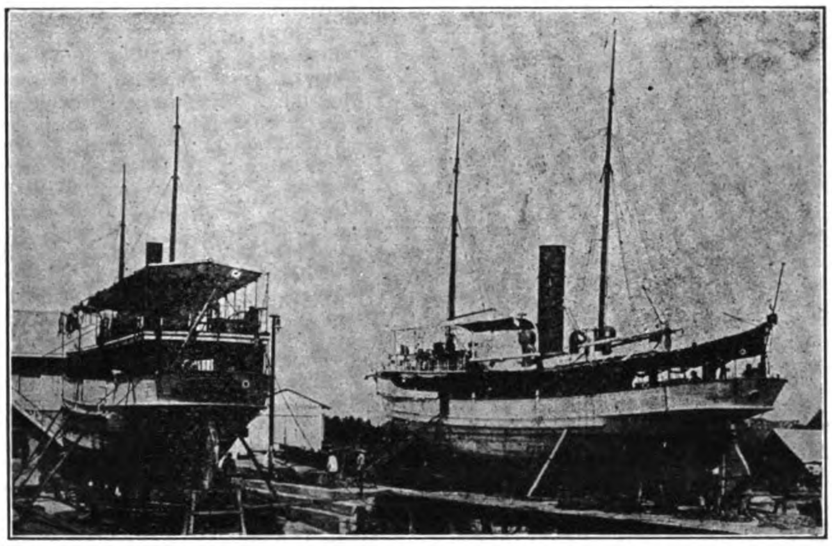
Many of the lighters used by the U. S. Army and Navy in the islands were constructed by the San Nicolas Works and several deposit vaults for the insular government constituted another feature of their activity. Mr. A. C. Sutton, the present manager, has been in charge for the last three years and his direction has been marked by ever increasing expansion of the facilities of the works to keep pace with the increased industrial activity in the archipelago.



SLIPWAY OF THE SAN NICOLAS IRON WORKS



MOTOR BOAT IN THE SERVICE OF SORSOGON PROVINCE CONSTRUCTED BY MESSRS. R. H. COOPER & CO. AND EQUIPPED WITH MEITZ & WEISS ENGINE



MARINE SLIPWAY

MANUEL EARNSHAW & COMPANY, LTD.

The above company was incorporated for ₱1,600,000 in 1909 and succeeded to the prosperous business of Messrs. Manuel Earnshaw & Co., one of the oldest engineering firms in the Philippines. The offices of this company are located at 15 Calle Barcelona, Binondo, Manila. The company controls an extensive engineering works in Manila on Calle Barcelona besides a large iron and brass foundry at 151 Calle Reina Regente, and a slipway at Cavite. Its operations include the construction and repairs to vessels and launches, boilers and all branches of mechanical and marine engineering.

The Earnshaw firm was established by Daniel Earnshaw who came to the islands in 1864 at the request of the Spanish Government to build a marine slipway in Cavite. After this work was completed he established himself in Manila in the engineering business and foundry work. The firm took charge of much of the work for the American Government and the navy during the early days of occupation and has steadily expanded. The officers of the company are: President, Mr. Manuel Earnshaw; First Vice-President, Tomas Earnshaw; Second Vice-President and Treasurer, Mr. Daniel Earnshaw, Jr.

H. R. COOPER & CO., MANILA

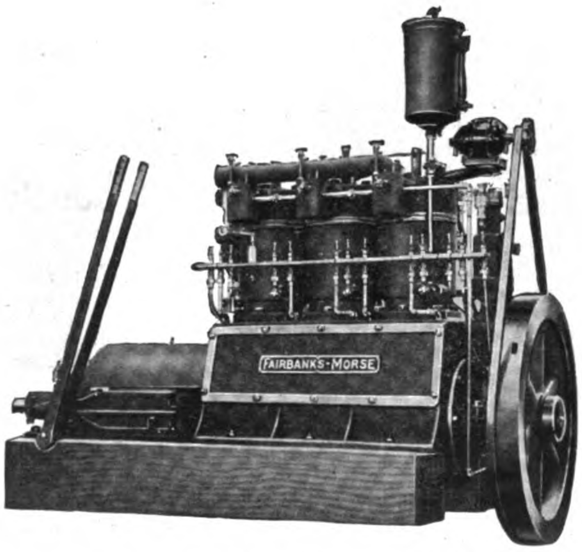
This company may be said to be among the pioneers of the modern motor boat industry in the Philippines. It has the exclusive agency for the Meitz & Weiss kerosene motor engine in the islands and perhaps no company has installed a greater number of motors in local craft than Messrs. Cooper & Co. Accompanying this sketch is the reproduction of a photograph of a launch built for a provincial government and typical of a large number constructed in Manila to the order of the company and equipped with Meitz & Weiss motors of various capacities.

The company makes a specialty of high grade construction. Only the best grades of Philippine hardwoods are used in building the frames and all the work under its direction conforms to standard specifications. The frames are copper-fastened throughout; the sheathing and deck planking is of teak and Muntz metal sheathing is utilized.

The launches are built, completely fitted, and delivered ready for sea with the exception only of fuel. The labor employed is Chinese and Filipinos. The carpentry work is done by the former and the machinery installation by native mechanics.

MESSRS. CASTLE BROS. WOLF & SONS, MANILA

Fairbanks-Morse & Co., through their Agents in Manila, Messrs. Castle Bros.-Wolf & Sons, have done quite a fair amount of



FAIRBANKS-MORSE MARINE ENGINE

THE MANILA TRADING & SUPPLY Co.

Since American occupation of the Philippines there has been an increased call for better methods of transportation than that offered by primitive sail boats and bancas propelled by paddle or pole. The call first came from Government officials who, in their inspection trips to out of the way places, found need for better and faster boats. The Government therefore placed many motor boats in service, and the advantages offered by such boats soon appealed to the natives. Today the natives in the Philippines are looking for better means of transportation, with the result that an increasing demand has been found for small internal combustion engines at moderate price.

The Manila Trading & Supply Co. was one of the first concerns to recognize the large field for motor boats, and commenced a campaign of demonstration. The importance of having a reliable engine, which, while not the cheapest, was at least within the reach of the Filipinos, was realized and the agency for the *Ferro Engine* was secured for the Philippines and Southern China. For speed work and for large boats, the agency for the *Sterling Engine* was secured.

The result of their campaign may be seen in all parts of the Islands. Shallow draft boats have been built and equipped with *Ferro Engines* for use on the rivers. Many *Ferro Engines* have been installed in bancas and other small native built boats.

Of the special motor boats sold by The Manila Trading & Supply Co., the boat shown in Fig. I is one of the best. This boat was built by the Hongkong and Whampoa Dock Co., and is now owned by the Customs Service, being used for night patrol work in Manila Bay. The boat is about 35 feet long and is equipped with a 25 40 H. P. Sterling Engine for speed work, an electric arc search light and dynamo, and an electric horn. The system of mufflers used makes the boat practically noiseless. The boat made on its trial trip 16½ miles per hour.

The Bureau of Customs has also had in use for about three years three converted ship's boats equipped with Ferro Engines. One of these boats has recently been dismantled and the engine, after about three years use, installed in a hull in place of a steam engine and boiler, propelling the boat better than before.

One of the prettiest and fastest boats in the Islands is a speed boat on the S. S. "Aguilar". That boat is 25 feet long and is equipped with an 18-25 H. P. Sterling engine. It makes about 18½ miles per hour. It was built at the Cavite Navy Yard. A similar boat for use on the S. S. "Rizal" is now being built at the Bureau of Navigation.

An unusual type of boat is one in use by the Bureau of Internal Revenue on the Cagayan River. That Boat has triple screws, having 7½ H. P. Ferro Engines on the two sides and a 15 H. P. Ferro engine in the center. The boat is about 40 feet long, has a cabin, and is lighted throughout with electricity. The boat was built at the Taikoo Docks. The electric lighting system is of the Dayton launch type, by which a dynamo charges storage batteries when the engines are running, thus permitting the use of the electric lights at any time, whether the dynamo is running or not.

Figure II represents a type of shallow draft boat supplied by The Manila Trading & Supply Co, such as is used on the shallower Philippine rivers. The boat is equipped with a 15 H. P. Ferro engine. There are several boats of this type in use in the Philippines.

At the present time many native bancas are being equipped with Ferro engines of small power, as such engines have been found to meet the needs of the natives in fishing boats and for transporting passengers and cargo on shallow rivers.

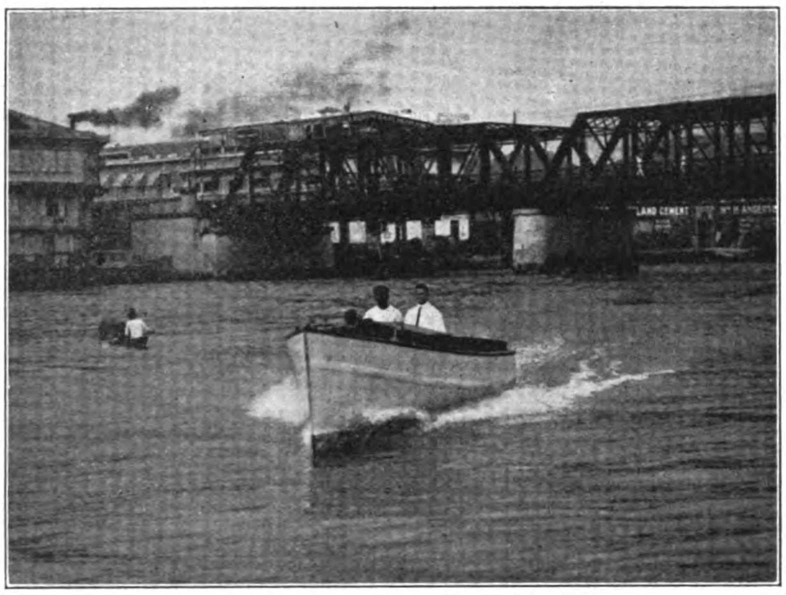


FIGURE I.—THE MANILA TRADING & SUPPLY CO.

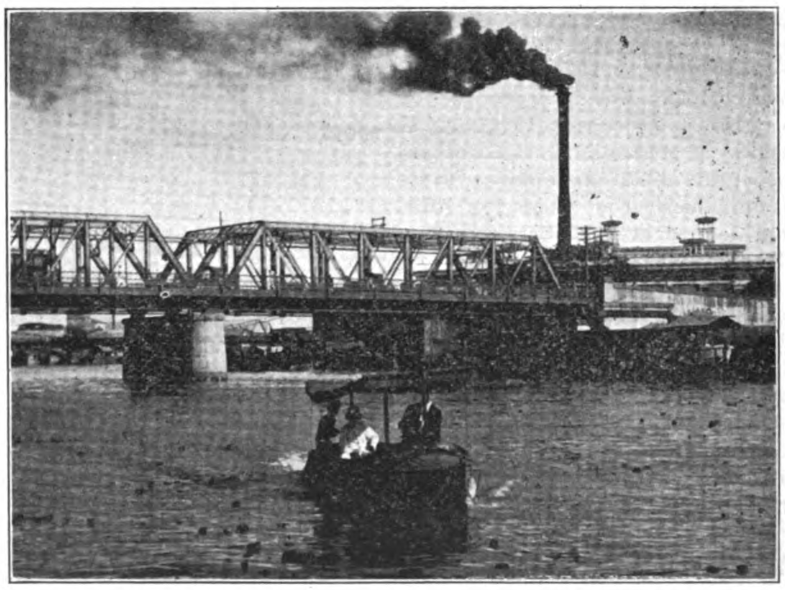


FIGURE II.—THE MANILA TRADING & SUPPLY CO.

business, more particularly in their stationary and vertical kerosene engines and gasoline and kerosene motors for launches—indeed, of these latter they have shipped from 3 H. P. to 100 H. P.

In addition their windmills under the mark "Eclipse" are well known throughout the Islands.

It is some four years since they first introduced their Duplex Steam pumps for tanks and boiler feed and their success has been more than satisfactory.

Owing to the difference in price between kerosene and gasoline the motors and engines operated by the former are much more in demand and the low consumption combined with the steady work of the Fairbanks-Morse Motors, whether under full power or less, strongly recommends them to the operator.

NEW RUSSIAN REVENUE CUTTERS

Five new motor boats are under construction by the Russian Government for revenue service on the Amur River. The power equipment is to be Fairbanks-Morse three cylinder heavy duty Marine Engines developing 30 horsepower on kerosene.

It is interesting to note that the order for these engines resulted from the sale of a 15 horsepower Fairbanks-Morse Marine Engine to the Russian Government some time ago, and which gave such reliable service that the new boats were ordered to be equipped with the same make of engine.

The manufacturers have just issued a beautiful new catalog describing all types of Marine Engines, which will be sent free to all of our readers who will write to Fairbanks & Morse Co., Chicago, Ill., U. S. A.

GOVERNMENT DOCKS AND ENGINEERING WORKS, MANILA

Among the most important works in the Philippines are those established on Engineer Island at the mouth of Pasig River and operated by the Bureau of Navigation. Under control of this Bureau are three slipways, two located on the South of Engineer Island served by marine railways with a capacity for receiving vessels of 1,000 tons and 200 tons respectively, while located on the North side of the Pasig is a drydock capable of receiving vessels up to 150 tons.

The slipways served by the marine railways are utilized for the repair of the vessels of the Bureau of Navigation fleet as well as outside work. The 1000-ton dock being used for the larger vessels and the 200-ton for the repair and construction of the smaller craft including river, bay, and sea going launches, cutters, ketches, etc. As the fleet of the Bureau comprises over 46 vessels besides numerous small craft, these slipways are very active.

The dry dock on the North side of the Pasig is utilized by the Division of Port Works for keeping its dredges, launches, etc., in repair and there is now being constructed a 100-ton snag boat which, when completed, will be utilized for removing snags from the Cagayan River. Its equipment will include dredging machinery, derricks, and other machinery for removing the obstructions. The cost is estimated at 75,000 pesos.

Besides these slipways a special division has been established for the construction of motor boats for government service. There is now being constructed a thirty-foot motor launch with six-foot beam for the Governor General as part of the equipment of the s. s. Rizal of the Navigation fleet. A 24 h. p. Sterling engine will provide the motor power and the vessel is designed to make 20 knots drawing 12 inches.

A large number of motor boats have been built on the Island for the different departments of the Government, ranging from ten to eighteen knots. Invariably the engines installed are the Ferro, Sterling, Meitz & Weiss, the Gray and the Remington.

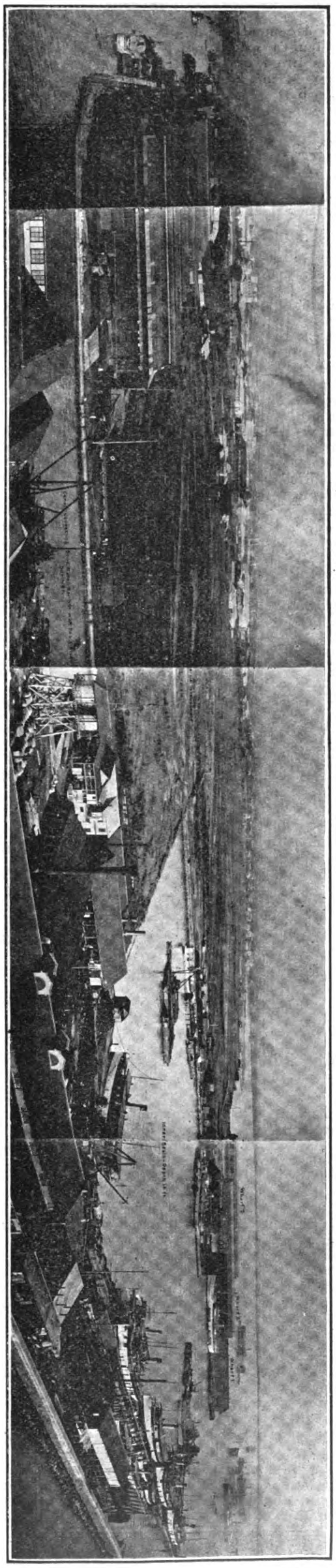
In connection with the shipbuilding and repair plants are large and modernly equipped machine shops and sawmill in which all the necessary machine and wood work covering the construction and repair of vessels is turned out with expedition. Besides the marine work the Light House Division operated by the Bureau of Navigation in conjunction with the shops on the Island provide the most modern facilities for the construction of lighthouse equipment.

The shops are equipped to cast all the propellers for the cutters up to 8.5 feet in diameter from tip to tip with 12 foot pitch. In the steel construction section all the steel towers for the lighthouse service are made. Among the machinery installations is a trip hammer of 100 tons capacity while the moulding and reviting and other machines are of the most modern pattern.

During the year 1910 the receipts for repair of Government vessels, etc., together with such outside work, amounted to ₱579,005. The Docks and shops employ a force of 300 men and the investment in plant alone is approximately ₱750,000.

The site of these works is ideal being situated on the New Harbor with a Pasig River frontage. As the demand for larger works increases there is every reason to believe that more extensive docks will be constructed. There have been several proposals from private capital to purchase the plant site and plant from the Government with a view to installing a modern shipbuilding plant sufficiently large to accommodate large foreign vessels calling at the port, but so far no definite action has been taken. As the works stand they are a valuable asset to the Government and very necessary for the purpose of keeping the insular fleet in repair.

The officials of the Bureau of Navigation in charge of the works are: Director, Frank P. Helm; Assistant Director, Julius S. Reiss; Second Assistant Director, L. A. Barlow; Chief Director of Port Works, K. S. Heck; Master Mechanic, Captain R. H. Robson; Inspector of Machinery, C. G. Helvering.

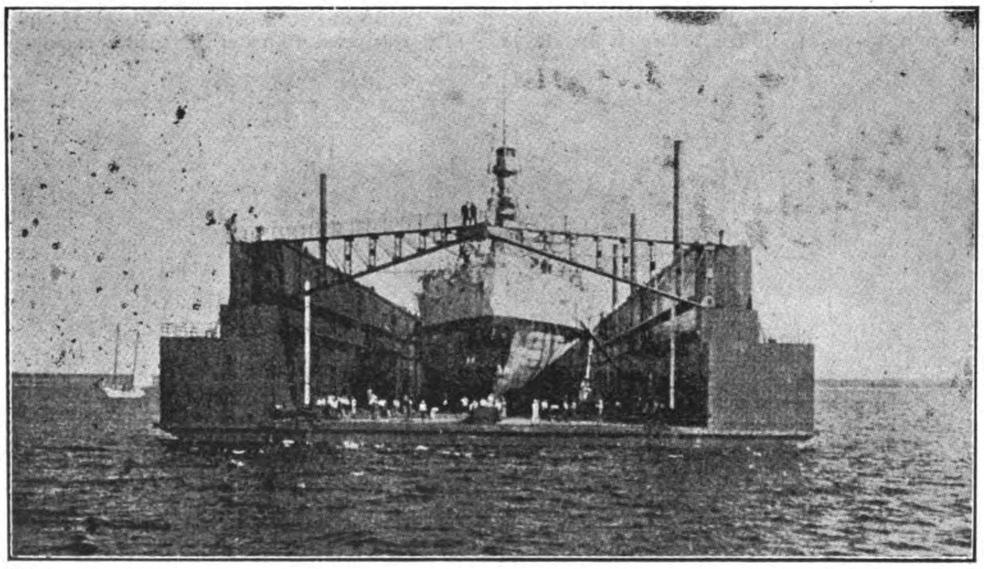


PHILIPPINE GOVERNMENT DOCKYARDS AND ENGINEERING WORKS ON ENGINEER ISLAND, MANILA

U. S. FLOATING DOCK DEWEY

This dock, which is in commission at the U. S. Naval Station at Olongapo, has a capacity to receive vessels up to 18,000 tons displacement. It has a length over all of 500 feet and the same over the blocks with a width at the entrance of 100 feet and a depth of 35 feet. The construction of this floating dock for the use of the Asiatic Squadron of the U. S. Navy was authorized by Congress in 1902 and the contract secured by the Maryland Steel Company of Sparrow's Point, Maryland, in 1903. It was completed in October 1905, and turned over to the Navy Department, by whom it was then towed to Manila making the voyage of 13,000 miles in less than five months from Maryland to Olongapo where it has been in commission ever since with the exception of four months during the year 1910 when it was mysteriously submerged and was with difficulty refloated.

The first test made before taking over was the docking of the cruiser Colorado with a



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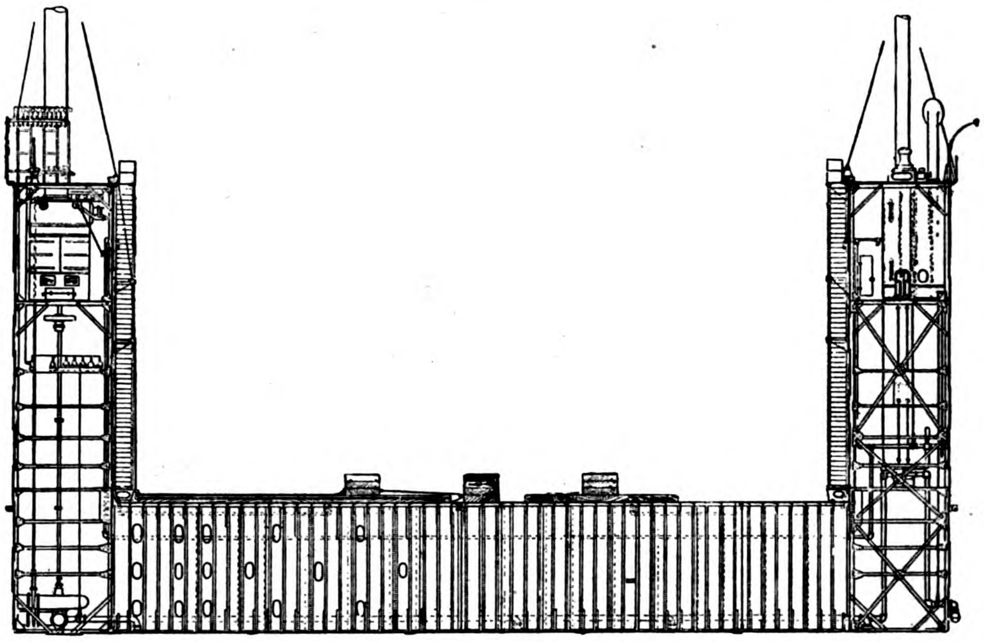
END VIEW OF DOCK, WITH BATTLESHIP ON THE BLOCKS

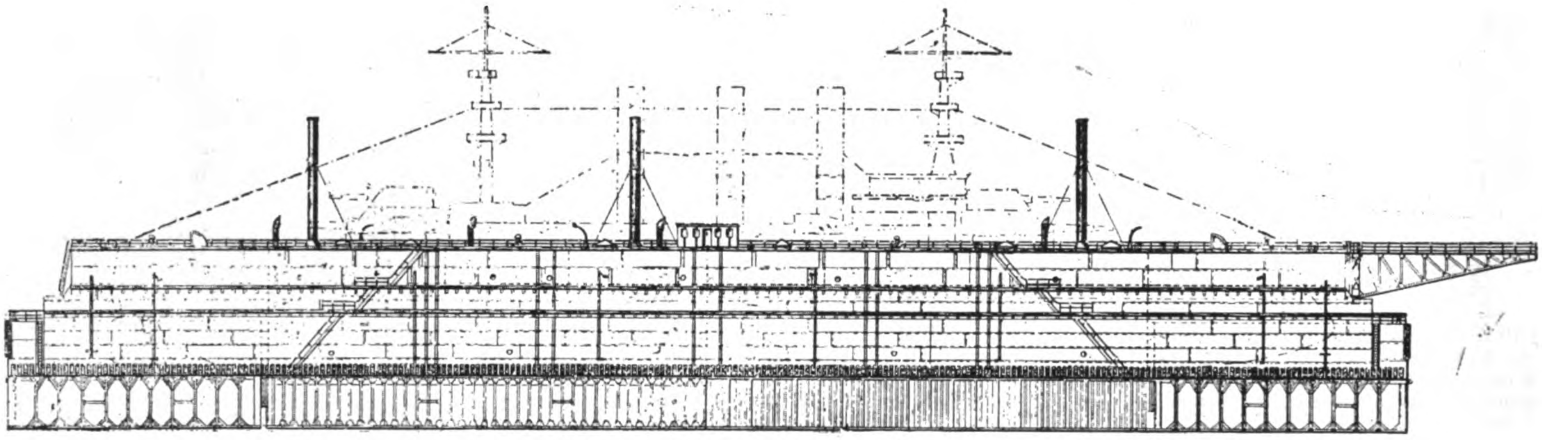
displacement of 13,300 tons distributed over a length of 500 feet. In this test the ship was lifted clear of the water in two hours, sixteen minutes. The second test was with the battleship Iowa, with a displacement of 11,600 tons distributed over a length of 350 feet. The vessel was lifted clear of the water in one hour and thirty seven minutes. Since the dock has been used at Olongapo, vessels have been docked and cleaned in six days and less.

The steam plant comprises three Babcock & Wilson boilers of the marine type, each having a grate area of 46 sq. ft. with a heating radius surface of 1,750 sq. ft. The steam is used for the main purpose of pumping the equipment for which comprises three 24-inch centrifugal and two 12-inch pumps of the same type. The former are used for the regular purpose for which the dock is designed while the latter are located in the end pontoons and are only used for self docking. The larger pumps are operated by a horizontal compound engine with 14.5 and 25 in. cylinders and 14 in. stroke. The cranks are at an angle of 135 degrees. With a steam pressure of 140 lbs. these engines develop at a speed of 225 r. p. m. about 225 indicated h. p. The smaller pumps are driven by simple engines with 12-inch cylinder and 10-inch stroke directly connected with the pump shaft. All the auxiliary machinery is operated by steam from a Babcock and Wilson Boiler with a grate surface of 18 sq. ft. and a heating surface of 750 sq. ft. and consists in the main of a 7-k. w. Sturtevant 110-volt generator driven by a simple direct connected engine 6-in. by 6 in. and a distilling apparatus with a daily capacity of 2,500 gallons.



CROSS SECTION OF CENTRAL SECTION OF DOCK

The cost of the dock under the original contract was $1,124,000 gold. The steel used in its construction weighed 11,000 tons which is held in place by 2,000,000 rivets. The total displacement is represented 30,000 tons at a draft of 16.5 feet. At light draft the dock draws 6 5 feet.



INBOARD PROFILE OF FLOATING DOCK DEWEY, WITH A BATTLESHIP ON THE BLOCKS

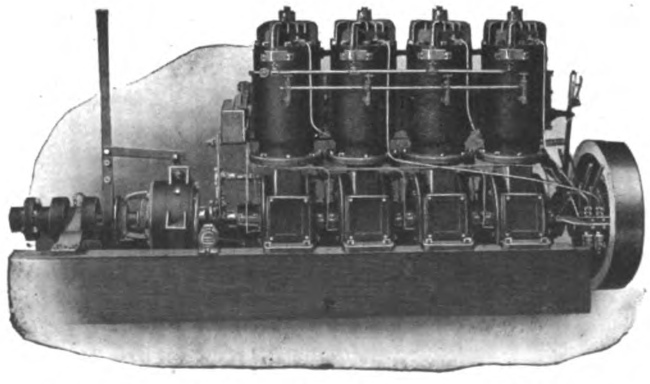
THE REMINGTON KEROSENE MARINE ENGINE.

Among the kerosene motors that have been successfully introduced in the Philippine Islands the Remington marine kerosene motor holds a prominent place. The Manila agents are F. W. Thompson and Frank L. Strong and during the year a large number of Remington marine engines have been installed besides meeting the demand for manufacturing plants throughout the islands. Among the marine installations which have proven most satisfactory is one 24 h. p. Remington installed in a 36 foot launch used for towing and bay work by the Manila Navigation Company of Manila. This vessel makes 9 knots.

A 22 h. p. Remington was installed in a 35 foot boat used for passenger and cargo service on the Cagayan River, Luzon. This vessel averages 9 knots. Another 26 foot launch equipped with a 10 h. p. Remington has been ordered for the same service.

A 10 h. p. Remington has been installed on a 28 foot dispatch boat used by the U. S. Navy for dispatch service between Carabao Island and Cavite. This boat has a speed of 8 knots.

A 22 h. p. Remington marine engine is now in service in Parang, Mindanao; a 6 h. p. in Davao and 20 h. p. in Tacloban, besides a number of orders booked during the month. This engine has given general satisfaction and has a splendid future before it in the Far East as its first introduction was early last year. Messrs. Thompson & Strong are two of the leading engineering firms of Manila whose operations extend to every section of the Philippine archipelago. They are splendidly equipped to cater to insular trade.

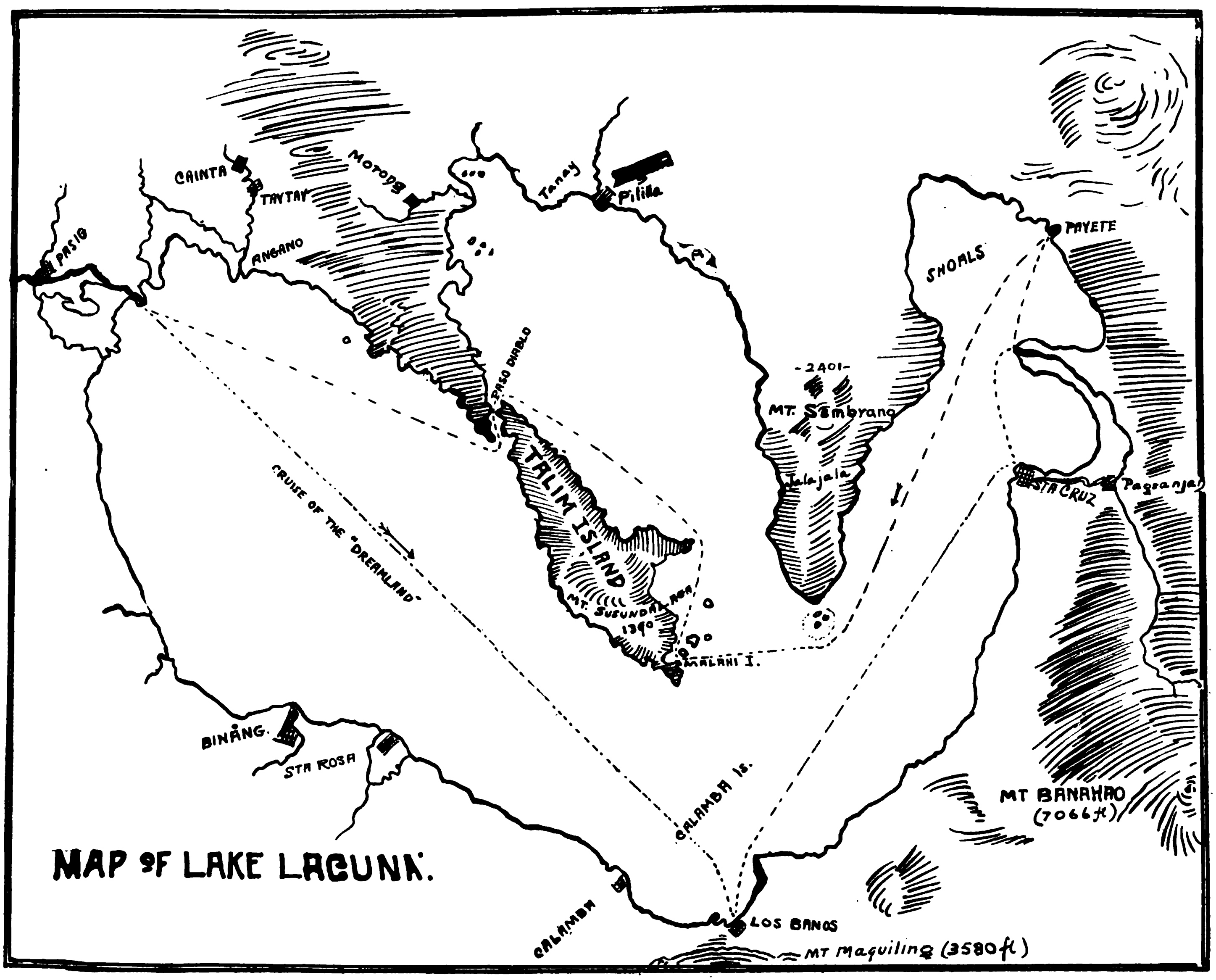


FOUR CYLINDER REMINGTON MARINE ENGINE

THE MOTOR BOAT IN THE PHILIPPINES

Ten years ago there were no gasoline or petroleum motor craft anywhere in Philippine waters. Today there are hundreds. From the Northern waters of Luzon to far away Davao Gulf the internal combustion engine is now much for the simplicity of the modern type of engine and also demonstrates the mechanical genius of average Filipino.

Of the two types of engines made the two-cycle has by far the greater lead here in making about fifteen knots per hour and over. At Cavite the Navy has a speedy launch, also Sterling 45 h. p., that will do perhaps a knot better. Mr. C. A. Robertson of the Supreme Court Staff has a sharp-nosed speed boat, 16



MAP OF LAGUNA DE BAY WITH ROUTE OF THE' MOTOR BOAT "DREAMLAND" ON CRUISE OF 150 MILES IN THE PICTURESQUE VOLCANIC REGION OF LUZON

almost as well known to the native as is the larger steam-propelled vessel. In fact, in many places the gasoline or petroleum craft is the only power boat the natives have ever seen. Thus far the provinces are far ahead of Manila in the use of motor boats, and the demand for good and serviceable launches of from 18 to 26 feet is rapidly increasing. This is especially so for plantation work, where they are used not only for pleasure but for real service, such as towing products of the plantation to market and returning with supplies. It is astonishing, too, how quickly the average provincial Filipino achieves a complete understanding of the internal combustion engine. The writer knows of many instances where an engine has been shipped to a provincial customer, and the engine installation made by Filipinos who never before had seen a machine of this type, and only gained a knowledge of its working by careful study of the little book of instruction that accompanied the machine. It speaks the islands. Each type has its friends, and each is represented here in Manila. It is not the writer's intention to touch on the merits of any one of these engines, suffice to say that with ordinary intelligent handling any well-known make of internal combustion engine will give satisfaction.

All sorts of nondescript craft have been converted into power boats, and in some instances these have proven a disappointment to their owners. They were either too heavy for the horsepower installed or of such clumsy model that any horsepower that might have been placed in them would have proved a disappointment. Where a prospective motor boat owner has gone to the trouble to carefully select plans and build his boat accordingly, the result has been satisfactory. There has been but little attempt, except here in Manila, to build high speed boats, the general idea being to have a moderate priced boat with a fair speed. The Customs Service boasts its Flier, Sterling 45 h. p., h. p. 4 cy. Brooks, that makes better than fifteen knots, and the Hon. Benito Legarda has a 26-foot Mulli that will give it a close race. To Mr. Daniel Earnshaw, of Earnshaw & Co., goes the honor of owning the speediest power-craft afloat in Manila waters. It is a 20-footer of the Viper model and was built at the Earnshaw yards at Cavite. She has a three-cylinder Gray racing type, 18 horsepower engine, and makes about 20 knots an hour.

Members of the Manila Motor Boat Club cannot boast of anything in the nature of a high-type of racing craft, and it is doubtful if the time will come when they, as a club, will care to introduce this expensive class of boats. There is so much more pleasure in the small cruising type, or the runabout, and so little expense for upkeep, that it will be hard for the racing enthusiast to break in. This club has a membership of about thirty, and is constantly increasing. Some very good boats are owned by the various

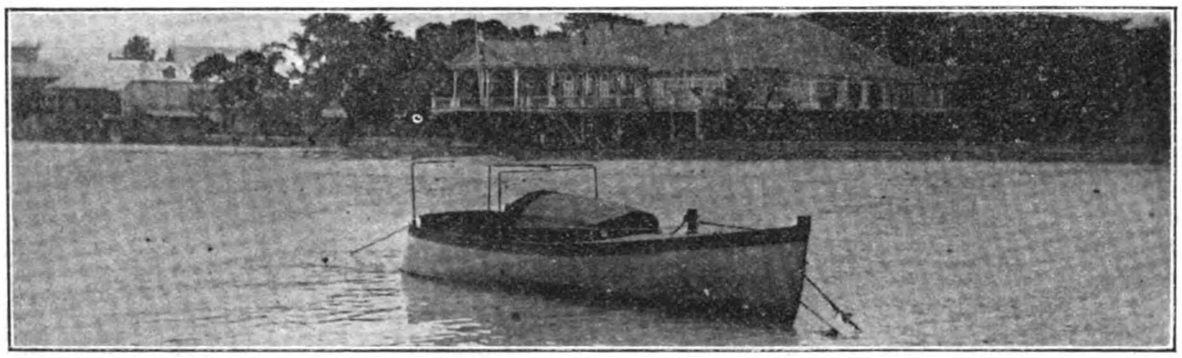
members, and as a club it has done much to stimulate the interest in motor boating in the islands. There are few week-ends that cannot account for cruising parties to the lake, or to some nearby provincial river emptying into Manila Bay. The most favored waters, however, are the Pasig with its numerous inlets from the lake, and Lake Laguna itself, that beautiful inland sea with its rugged mountain shores and its enchanted islands, a two-hour run from Manila.

The delight of cruising on these inland mountain-walled waters, is best told, perhaps, by one of a party of eight who recently made a seventeen hour cruise on the Dreamland, a handsome 40 foot cruiser, 2 cy. 12 h. p. Gray motor, owned by a member of the Manila Motor Boat Club:

"We left Manila at midnight and were soon away from the glare of electric lights and out in the cool atmosphere of the lowlands above Pasig, where the river winds like a great serpent until it opens out into the lake where it has its source. Just above the Pasig bridge, where the river sweeps deep and swift along the stone wall that protects the bank on the Pasig City side, we caught a fleeting glimpse of a belated city-bound street car, probably the last in for the night. After its lights disappeared behind the wooded heights above the towering bridge, we felt that we had really left Manila behind us.

"We had taken our blankets and pillows to the upper deck of the cruiser's cabin, and stretched out flat on our backs enjoyed to the full the cooling breeze and passed the time with stories and song.

"To fully appreciate the night beauties of this enchanted body of water, one must actually make the trip across the lake on a night like this. There was not even the faintest intimation of a swell on the bosom of the lake, although the afternoon before a steady sou'wester had fanned it into a sea of white-headed billows. To the left the sharp crest of Talim Island showed faintly against the fainter mists of far-away Banaho on the southern shore. Above it all, and reflected in the placid waters, the dome of the sky shone resplendent with blinking stars, and like a great set piece, the Southern Cross hung low over the sleeping, mist-shrouded mountains of Laguna. Off to the west towards the low-lying shore above Taguigue, hundreds of lights flashed like restless glow-bugs and now-and-then the weird notes of the conch horn came wavering across the water. It was the lake fishing fleet in rendezvous with the night's catch. The low, steady purr of our engine in the after cabin below, and the soft swish of the waves as the sharp nose of the Dreamland cut its way through the water, was new music to most of us. It seemed unbelievable that so small an engine could propel so large a craft with such ease. The first stage of our journey was reached, when the anchor was let go a few yards off the Los Baños wharf at 4:40 a. m. Maquilin's lofty peak back of Los Baños was flooded with the rays of the morning sun when we awoke, although old



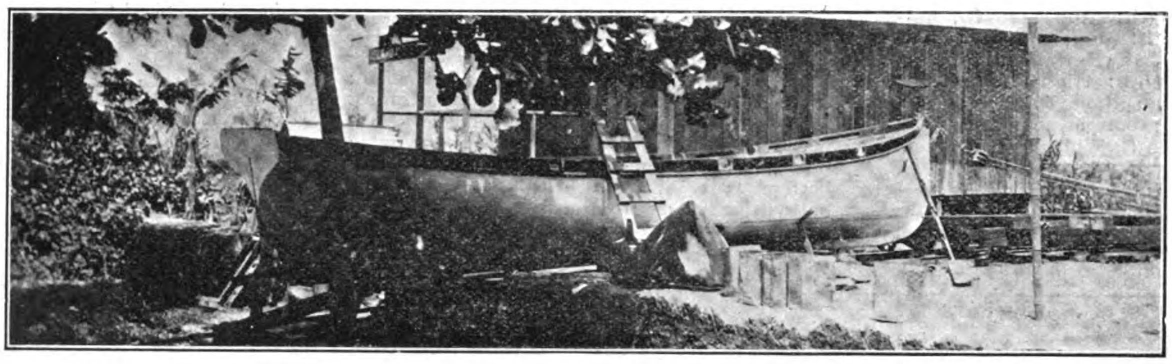
W. A. ROBERTSON'S SPEED MOTOR BOAT ENGINED BY A 16 H. P. BROOKS. SPEED 15 KNOTS, BUILT BY THE ISLAND BOAT WORKS, MANILA

YARD OF THE ISLAND BOAT WORKS, MANILA

Sol himself was hidden from our view by the lofty range to the east.

"On shore at the McElvain house we partook of a most appetizing breakfast, and some of the party wished to remain afterward and try out the famous hot mineral baths. But the cool morning breeze blowing down the channel Santa Cruz was too inviting to resist longer our eastward cruise and we were soon aboard and away. With each mile of our voyage the picture of lake and mountain took on new a night. Each shower, each day of drought, will so change the nature of its hundreds of slender falls that it never appears the same. The mighty roar of the main stream, however, is always there, singing in grand chorus where the cascade is high and tortuous, and with just the gentlest refrain where the stream glides smoothly beneath the darkened overhanging walls below.

"Three hours after leaving the cruiser we were again on board and headed for the low of which Malahi, the old military prison isle, is the largest, looked inviting across the channel to the East as we motored on down Talim's coast towards Paso Diablo. Arriving at the latter place the anchor was again thrown out, and although a heavy current was setting through the pass, caused by a high running sea on the Western arm of the lake, the passengers were soon overboard enjoying a swim.



TOW LAUNCH CONSTRUCTED BY THE ISLAND BOAT WORKS FOR THE INSULAR LUMBER CO.

loveliness as the rising sun drove back the mists and dissolved the last lingering gloom of the mountain gorges.

"We took turns studying through the glasses each distant isle or mountain peak as we motored up the south shore towards Santa Cruz and the day was still young when we finally dropped our anchor off that port. Here we again took banca for shore and, securing carretelas, made the drive to Pagsanjan. Luzon can boast of few roads like that three-mile stretch between the two Laguna towns. Of well-rolled macadam and rounded so that it is given perfect drain, it winds with picturesque curves beneath the stately coco palms that line its entire length. And the town itself: what a pretty village! There are the usual nipa homes, but somehow they seem cleaner and better kept than in the average provincial town. There are a number of substantially built residences along well-laid-out streets and the stores in the business district would do credit to a much larger place. Located as she is, on the very foot-stool of Banahao, Laguna's highest mountain, there is excellent drainage and the most latent possibilities for civic artistic arrangement of parks and thoroughfares. Less than a mile above the town, out of dark green and rugged vine-clad walls, the Pagsanjan river, born at a dizzy height back in the tropical jungle forest, comes tumbling down the cleft in the mountain's side; gleaming, silvery cascades, and then winds its shining miles peacefully beneath the overhanging trees, to mingle finally with the waters of the lake beyond.

"There is no use to dwell at length on the excitement of that banca trip up the canyon for most Manilians have tried it. It was not my first trip for I had been there several times before, but like each other visit I had made, it was different. The canyon with its leaping falls will change its whole aspect in

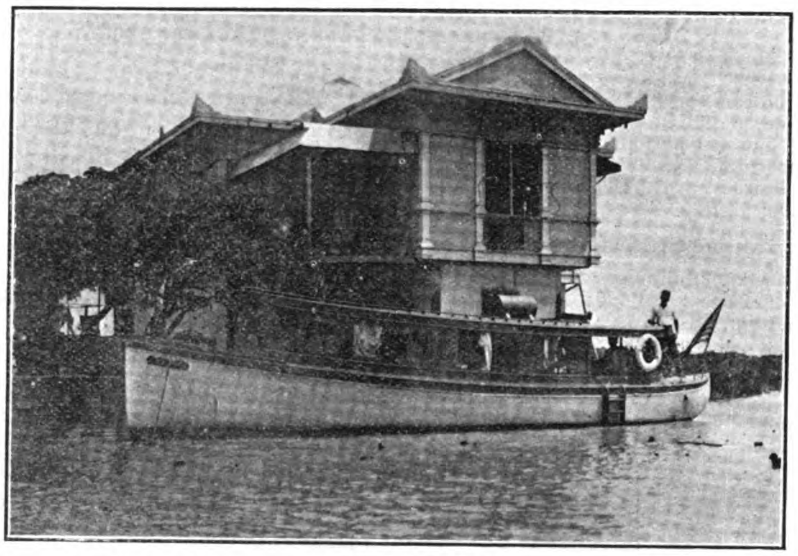
mountain range to the east where Payete, that romantic little village of wood-carvers, nestles snuggly up against the side of the flower-bedecked cliffs.

"Stepping ashore at Payete a single hour spent at this delightful mountain town only whetted our appetites for more, but with a long cruise yet before us, we reluctantly withdrew to the cruiser. Headed down the lake again, this time steering a course for Talim and the Malahi islands, we experienced a head wind that delayed all attempts at preparing tiffin. Under the lea of Talim, however, the lake was smooth, and anchorage good.

"The little cluster of green topped islands,

"The sun was still more than an hour above the western horizon when the Dreamland headed out of the pasos and into the white foam-flecked lake.

"It was a joyous trip across the 12 miles of tumbling waters to the mouth of the Pasig which we entered just as the sun dropped behind the hills bordering the Western shore of the lake. There was not a person on board who did not regret leaving that wonderful panorama of lake and mist-shrouded mountains, for, although our cruise had extended over a course of more than one hundred and fifty miles, we had not visited one half of the interesting places to be found along the shores of this Enchating Inland-Sea."



THE "DREAMLAND" AT ANCHOR OFF ISLAND BOAT WORKS, MANILA

OTHER DOCKYARDS IN THE FAR EAST

JAPAN

BINGO DOCK YARD CO. LTD.

Location, Sansho (Mitsunoho, Island of Innoshima). Stone Dock No. 1—Length: top, 410 ft.; bottom, 395 ft. Width: top, 82 ft.; bottom, 60 ft. Width at Entrance: top, 57 ft.; bottom, 52 ft. Depth: High tide, 24 ft.; low tide, 13 ft.

Dry Dock No. 2 (at Mitsunosho).—Length: top, 292'3"; bottom, 282'3". Breadth at Entrance: 41'9"; Depth: 15'5".

FUJIUCHI FUKUJIRO

Location—Niihama. Wood & Stone Dock No. 1.—Length: top, 120 ft.; bottom, 105 ft. Width: top, 41 ft.; bottom, 26 ft. Width at Entrance: top, 35 ft.; bottom, 35 ft. Depth: High tide, 4 ft.; low tide, o ft. Wood & Stone Dock No. 2.—Length: top, 100 ft.; bottom, 90 ft. Width: top, 30 ft.; bottom, 20 ft. Width at Entrance: top, 35 ft.; bottom, 35 ft. Depth: Higth tide, 3 ft.; low tide, o ft. Stone Dock No. 3—Length: top, 102 ft.; bottom, 90 ft. Width: top, 41 ft; bottom, 26 ft. Width at Entrance: top, 31 ft.; bottom, 31 ft. Depth: High tide, 4 ft.; low tide, o ft. Stone Dock No. 4.—Length: top, 130 ft.; bottom, 115 ft. Width: top, 41 ft.; bottom, 26 ft. Width at Entrance: top, 31 ft.; bottom, 31 ft. Depth: Higth tide: 4 ft.; low tide, o ft.

FUJIEDA SHIPYARD

Location—Osaka (Fujinagata Dry Docks.)—Description of Docks: Wood; No. 1 dock: Length on bottom, 250'; No. 2 dock: Length on bottom, 156'; No. 1 dock: Width, entrance 29'; No. 2 dock: Width, entrance 38'; No. 1 dock: Depth on Sills, 12'; No. 2 dock: Depth on Sills, 10'.

HARADA SHIPBUILDING & ENGINEERING WORKS

(Harada Juijiro)

Location—Osaka, Japan. Description of Docks: Wood, No. 1 dock: Length on bottom, 210'; No. 2 dock: length on bottom, 152'; No. 1 dock: width, entrance, 36'; No. 2 dock: width, entrance, 29'; No. 1 dock: depth on sills, 12' 6".

HATOHAMA DOCK CO.

Location—Hatohama.—Stone Dock No. 1—Length: top, 126 ft.; bottom, 120 ft Width: top, 50 ft.; bottom, 41 ft. Width at Entrance: top, 33 ft.; bottom, 31 ft. Depth: High tide, 5 ft.; low tide, o ft. Stone Dock No. 2.—Length: top, 156 ft.; bottom, 150 ft. Width: top, 52 ft; bottom, 41 ft. Width at Entrance: top, 35 ft.; bottom, 32 ft. Depth: High tide, 5 ft; low tide, o ft.

INNOSHIMA DOCK CO.

Location, Tsuchibu (at Habu, Island of Innoshima)—Stone Dock No. 1.—Length: top, 300 ft.; bottom, 300 ft. Width: top, 51 ft.; bottom, 40 ft. Width at Entrance: top, 39 ft.; bottom, 36 ft. Depth: High tide, 13 ft.; low tide, 12 ft. Rock cut open Dock No. 2.—Length: top, 364 ft.; bottom, 357 ft. Width: top, 71 ft; bottom, 49 ft. Width at Entrance: top, 49 ft.; bottom, 44 ft. Depth: High tide, 20 ft.; low tide, 11 ft.

KOMPIRA DOCK CO.

Location, Shirakata. Rock cut open Dock.—Length: top, 179 ft.; bottom, 169 ft. Width: top, 41 ft.; bottom, 35 ft. Width at Entrance: top, 28 ft.; bottom, 28 ft. Depth: High tide, 10 ft.; low tide, o ft.

KINUURA SHIPYARD

Location, Ohama, Japan. Wood Dock.—Length: top, 250 ft.; bottom, 210 ft. Width: top, 65 ft.; bottom, 32 ft. Width at Entrance, top, 41 ft.; bottom, 30 ft. Depth: High tide: 12 ft.; low tide, 7 ft.

IMPERIAL JAPANESE GOVERNMENT NAVAL DOCKS

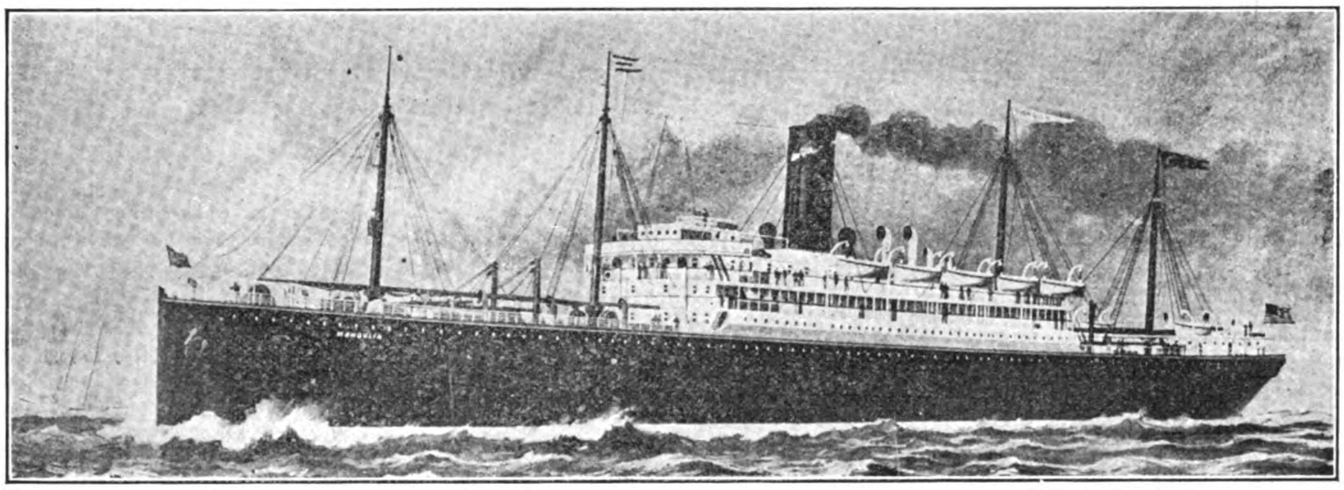
Kure: Dry Dock, No. 1.—Length: top, 464'0"; bottom, 413'2". Breadth at Entrance: top, 79'5"; bottom, 58'5". Depth: 28'2" on blocks.

Kure: Dry Dock, No. 2.—Length: 485'6" on blocks. Breadth at Entrance: top, 93'3"; bottom 81'3". Depth: 35'9" on blocks.

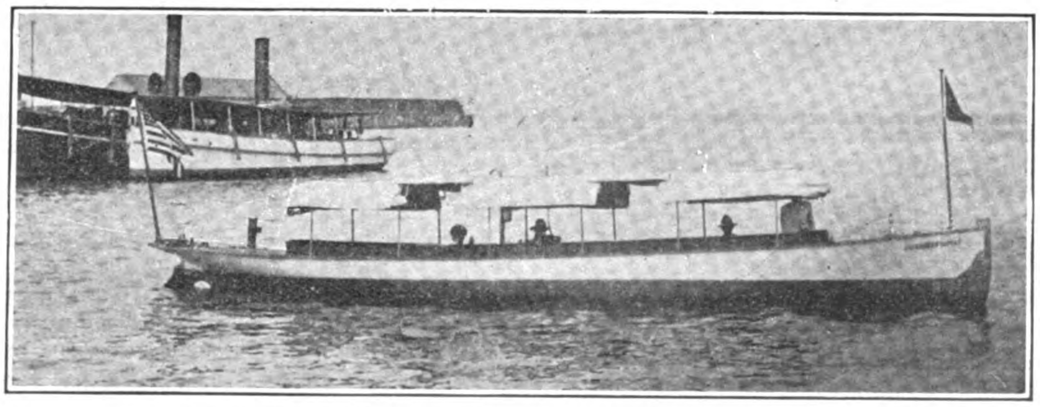
Maidzuru Naval Dockyard (Prov. Tango) Three Dry Docks: Imperial Japanese Government.

NOCHI DOCK CO.

Location, Nochi. Stone Dock No. 1.—Length: top, 202 ft.; bottom, 196 ft. Width: top, 51 ft.; bottom, 37 ft. Width at Entrance: top, 33 ft.; bottom, 29 ft. Depth: High tide, 13 ft.; low tide, 10 ft. Stone Dock No. 2.—Length: top, 149 ft.; bottom, 146 ft. Width: top, 51 ft.; bottom, 37 ft. Width at Entrance: top, 32 ft.; bottom: 29 ft. Depth: High tide, 10 ft.; low tide, 7 ft.



S. S. MONGOLIA 27,000 TONS DISPLACEMENT BUILT BY THE NEW YORK SHIPBUILDING CO



PETROLEUM MOTOR LAUNCH, "FAIRBANKS MORSE" ENGINES, 10 H. P., SPEED 8 KNOTS PER HOUR. SUPPLIED BY MESSRS. CASTLE BROS. WOLF & SONS. LENGTH 38 FT., BEAM 7 FT. DRAWS 2½ FT. OF WATER. BUILT OF PHILIPPINE HARDWOODS WITH TEAK FITTINGS AT SAN NICOLAS IRON WORKS, MANILA

MATSUO IRON WORKS AND DOCKYARD

Nagasaki (Naghama) New Graving Dock.—Length: top, 320'0"; bottom, 310'0".

Breadth at Entrance: top, 48'0"; bottom, 40'0". Depth: 17'0"

OSAKA SENKYO KABUSHIKI KAISHA (OSAKA DOCK CO. LTD.)

Location: Osaka, Japan.—Description of Docks: Wood and stone. No. 1 dock: Length on bottom 254'. No. 2 dock: Length on bottom 196'. No. 1 dock: Width entrance 45'. No. 2 dock: Width entrance 45'. No. 1 dock: Depth on sill, H. W. 14'. No. 2 dock: Depth on sill, H. W. 12'

ONO SHIPYARD

Location, Osaka, Japan.—Wood Dock.—Length: top, 180 ft.; bottom, 175 ft. Width: top, 41 ft.; bottom, 29 ft Width at Entrance: top, 28 ft.; bottom, 27 ft. Depth: High tide, 12 ft.; low tide, 10 ft.

IMPERIAL JAPANESE GOVERNMENT PONTOON

Ominato (Awomori Gulf).

ONOMICHI DRY DOCK

Onomichi (Mukaijima), Onomochi Zosensho. Length: top, 212'0"; bottom, 210'0". Breadth at Entrance: top, 32'0"; bottom 28'0". Depth: 13'0".

MATSUBA DRY DOCK AND IRON WORKS

Onomichi (Mukaijima). Length: top, 163'0"; bottom 162'6", Breadth at Entrance: 27'8". Depth: 9'0".

OKAWA SHIPPING CO.

Location, Okawa. Wood & Stone Dock. Length: top, 250 ft.; bottom, 230 ft. Width: top, 43 ft.; bottom, 35 ft. Width at Entrance: top, 40 ft.; bottom, 30 ft. Depth: High tide, 11 ft.; low tide, 0 ft.

AJIKAWA DRY DOCK, AJIKAWA ZOSENSHO

Osaka. Length: top, 122'0"; bottom 118'0". Breadth at Entrance: 30'0". Depth: 6'0".

SHIMODA DOCK CO.

Location, Shimoda. Stone Dock. Length: top, 147 ft.; bottom, 140 ft. Width: top, 43 ft.; bottom, 31 ft. Width at Entrance: top, 35 ft.; bottom, 30 ft. Depth: High tide, 12 ft; low tide, 7 ft.

IMPERIAL JAPANESE GOVERNMENT NAVAL DOCKS

Sasebo: Floating Dock. Length: 280'0"; Breadth at Entrance: 38'0"; Depth: 11'6".

Sasebo: Dry Dock. Imperial Japanese Government: Length: 435'0"

Sasebo: Dry Dock. Imperial Japanese Government: Length: 377'0"

Sasebo: Dry Dock. Imperial Japanese Government: Length: 538'0"

Takeshiki (Tsushima) Pontoon. Imperial Japanese Government.

TOBA IRON WORKS AND DOCKYARD

Location, Toba, Owari Bay, Prov. Shima. Stone Dock. Length: top, 283 ft.; bottom, 279 ft. Width: top, 62 ft.; bottom, 49 ft. Width at Entrance: top, 42 ft; bottom, 34 ft. Depth: High tide, 13 ft.; low tide, 11 ft.

ISHIKAWAJIMA S. B. & E. CO. LTD.

Tokio: Ishikawajima (Dry Dock). Length: top 299'0"; bottom 270'0"; Breadth at Entrance: top, 41'9"; bottom, 32'9". Depth: 12'0".

URAGA DOCK CO. LTD.

Uraga (15 miles from Yokohama) Dry Dock No. 1.—Length: top, 497'0"; bottom, 482'2". Breadth at Entrance: top, 70'0"; bottom, 60'0". Depth: 25'5" on blocks.

Uraga (15 miles from Yokohama) Dry Dock No. 2.—Length: top, 456'10"; bottom, 448'4". Breadth at Entrance: top, 65'6"; bottom, 53'6". Depth: 24'4".

IMPERIAL JAPANESE GOVERNMENT NAVAL DOCKS

Yokohama, Yokosuka, No. 1.—Length: top, 357'7"; bottom, 297'11". Breadth at Entrance: 82'0". Depth: 21'4".

Yokosuka No. 2.—Length: top, 452'9"; bottom, 447'1". Breadth at Entrance: 94'5". Depth: 28'11".

Yokosuka No. 3.—Length: top, 282'2"; bottom, 261'2". Breadth at Entrance: 45'3". Depth: 17'11".

Yokosuka No. 4.—Length: top, 541'4"; bottom, 538'8". Breadth at Entrance: 98'5". Depth: 31'11".

CHINA

Amoy: New Amoy Dock Co. Ltd.—Length: top, 360'0"; bottom, 340'0". Breadth at Entrance: top, 60'0"; bottom, 40'0". Depth: 19'6". Dairen: South Manchuria Railway (Japanese Government). Leased by Kawasaki Dockyard Ld. Length: top, 422'1"; bottom, 381'1". Breadth at Entrance: 42'11" on bottom. Depth: 19'9".

Foochow: Chinese Government.—Dry Dock.—Length: top, 328'0"; Breadth at Entrance: top 70'0". Depth: 20'0".

Hongkong: No. 1 Dock. Imperial Government. Length: top, 568'7"; bottom, 556'9". Breadth at Entrance: top, 95'0". Depth: 39'."

Taku: Imperial Dock and Naval Yard. Length: top, 360'0"; bottom 335'0". Breadth at Entrance: 40'0". Depth: 12'0".

Taku: Dry Dock No. 1, Taku Tug & Lighter Co. Ltd.—Length: top, 335'0"; bottom, 315'0". Breadth at Entrance: 36'0". Depth: 11'0"

Taku: Dry Dock No. 2, Taku Tug & Lighter Co., Ltd.—Length: top, 300'0"; bottom, 275'0". Breadth at Entrance: 30'0". Depth: 10'0".

Taku: Dry Dock No. 3, Taku Tug & Lighter Co., Ltd.—Length: 300'0" on blocks. Breadth at Entrance: 28'0". Depth: 10'6".

Taku: Dry Dock No. 4, Taku Tug & Lighter Co., Ltd.—Length: 300'0" on blocks. Breadth at Entrance: 40'0". Depth: 10'6".

Tongku: Dry Dock No. 1, Etablissement Docks & Appontments de Tongku.—Length: 260'0". Breadth at Entrance: 50'0". Depth: 9'0".

Whampoa: Cooper's Dock: Chinese Government. Length: 430'0". Breadth at Entrance: 65'0". Depth: 16'0".

Whampoa: Locksun Dock: Chinese Government.—Length: 450'0". Breadth at Entrance: 75'0". Depth: 18'0".

PHILIPPINE ISLANDS

Cebu: Patent Slipway: Manuel Novo.
Iloilo: Patent Slipway: Cho Hanlin.
Manila: (Cavite) Arsenal Slip: U. S. Government.

Manila: (Malabon) Patent Slipway: Luis R. Yangco.

Manila: Patent Slipway: Luis R. Yangco.
Manila: (City) Dry Dock: Length: 105'0". Breadth at Entrance: 24'0". Depth: 7'6".

Manila: Patent Slipway: Juan Rodriguez.
Manila: Patent Slipway: Insular Government.

SIAM

Bangkok: Dry Dock No. 1: Bangkok Dock Co., Ltd.—Length: top, 300'0"; bottom, 260'0". Breadth at Entrance: top, 45'0"; bottom 40'0". Depth: 11'6"

Bangkok: Dry Dock No. 2: Bangkok Dock Co. Ltd.—Length: top, 110'0"; bottom, 100'0". Breadth at Entrance: 23'0". Depth: 7'6".

Bangkok: Dry Dock No. 2; Government.—Length: top, 321'7"; bottom, 302'5". Breadth at Entrance: 48'0". Depth: 14'6".

Bangkok: Dry Dock No. 2. Samsen Dock & Engineering Co. Ltd.—Length: top, 215'0"; bottom, 205'0". Breadth at Entrance: 33'0". Depth: 13'0".

Bangkok: Patent Slip: Howarth, Erskine, Ltd.

SIBERIA

Vladivostock: Floating Dock: Government. Length: top, 301'0"; bottom, 301'0". Breadth at Entrance: 74'6". Depth: 26'0".

Vladivostock: Dry Dock: Government. Length: 572'0" top; 512'0" bottom. Breadth at Entrance: 90'0". Depth: 30'0".

Vladivostock: Dry Dock: Government. Length: top, 635'6"; bottom, 618'6". Breadth at Entrance: 90'0". Depth: 34'6".

STRAITS SETTLEMENTS

Penang: Patent Slip: Eastern Shipping Co., Ltd.

Penang: Patent Slip: Eastern Shipping Co., Ltd.

Selangor: Patent Slipway: Government.

Singapore: Tanjong Rhoo Slipway No. 1. Singapore Slipway and Engineering Co., Ltd.

Singapore: Tanjong Rhoo Slipway No. 2. Singapore Slipway and Engineering Co., Ltd.

Singapore: Tanjong Rhoo Slipway No. 3. Singapore Slipway and Engineering Co., Ltd.

SUMATRA

Belawan: Nil.
Deli: Nil.
Olehleh: Nil.
Padang: Nil.

TONKIN

Haiphong: Patent Slip: Marty & d'Abbadie.

Saigon: Dry Dock: Government.—Length: 530'0". Breadth at Entrance: 72'0". Depth: 30'0".

Saigon: Small Dry Dock for Gunboats. Government. Length: 236'0". Breadth at Entrance: 32'5". Depth: 12'0".

Saigon: Floating Dock: Government. Length: 135'0". Saigon Three Slips, each.—Government.

INDIES, EAST

Java: (Batavia) Floating Dock: Droogdok Maats. Tandjong Priok. Length: 324'0". Breadth at Entrance: 67'0".

Java (Batavia) Patent Slip: Droogdok Maats. Tandjong Priok.

Java: (Sourabaya) Iron Floating Dock: Government. Length: 328'1". Breadth at Entrance: 62'3". Depth: 24'6".

Java: (Sourabaya) Three Pontoons: Government.

Java: (Sourabaya) Patent Slip: Government.

BIDS OPENED AT MANILA ON CONSTRUCTION OF INTER-ISLAND SEAGOING TRANSPORT.

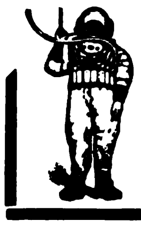
Bids were opened at the Office of the Chief Quartermaster for the construction of an Inter-island sea-going transport as follows:

The Honkong & Whampoa Dock Co., Ltd., of Hongkong, $347,625 U. S. C.; Shanghai Dock & Engineering Co., Ltd., $314,000 U. S. C., and the Taikoo Dockyard and Engineering Co., Ltd., of Hongkong, $310,796 25, the last being the lowest bid. The first two bidders asked for 12 months to deliver and the Taikoo, 13 months.

The following are the specifications:

A twin screw transport steamer of the awning deck type, length over all 300 feet; length between perpendiculars 285 feet; beam 45 feet, and depth 28 feet. Power will be furnished by two sets of triple expansion, surface condensing steam engines, to have boilers approximately 12 feet in diameter and 12 feet long. These engines to be capable of developing power for a speed of 12½ knots.

J. J. CHOLLOT
INGENIEUR DES PONTS ET CHAUSSEES
CIVIL ENGINEER, SURVEYOR AND ARCHITECT
53 QUAI DU YANG-KING-PANG, SHANGHAI



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American Tool Works	4
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Arnhold Karberg & Co	26
Astor House Hotel Co.	62
Asiatic Petroleum Co	82
Baldwin Locomotive Works	18
Beardmore, Wm. & Co., Ltd	86
Bazar Siglo XX	7
Banco Español Filipino	Cover
Bell, David W	23
Berry, Henry & Co., Ltd.	29
Bohler Bros & Co.	61
Boulton & Paul Ltd.	98
British American Tobacco Co., Ltd.	51
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Cadwallader-Gibson Lumber Co.	7
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Chee Hsin Cement Co., Ltd	58
China Import Export Lumber Co.	75
China Merchants Steam Nav. Co.	54
China Mutual Life Insurance Co.	59
China and Manila S. S. Co	31
China General Engineering Co.	33
Chinese Eng. & Mining Co	2
Cia. General de Tabacos Filipinas	52
Cia. Trasatlantica	52
Claflin Co., The H. B	50
Clarke, M. A	60
Cook's Sons, Adam	69
Cooper H. R. & Co	96
Cramp., William & Sons	91
Dearborn Drug and Chemical Works	101
Defiance Machine Works	27
Detroit Engine Works	43
Deutsch-Asiatische Bank	1
Dollar, Co., The Robert	55
Earnshaw, M & Co., Inc	96
Easterbook Allcard & Co	61
Eastern Engineering Co	43
El Varadero de Manila	33
Export and Import Lumber Co	7
Fearon, Daniel & Co	44
Fairbanks Morse & Co.	4-97
Ferro Machine & Foundry Co.	43
Fressel, C. & Co	15
Fushun Coal	36-37
General Electric Co.	27-94
Germinal Cigar Factory	51
Gordon & Co	4
Goulds Manufacturing Co.	74
Gray Motor Co.	43
Green Island Cement Co., Ltd.	56
Han-yeh-Ping Iron & Coal Co. Ltd.	72
Hanyang Iron & Steel Works	72
Harvey, Stuart S.	75
Henschel & Sohn	46
Herbrand & Co., P	48
Hongkong Rope Mfg. Co., Ltd	31
Hongkong & Shanghai Banking Corp	Cover
Hongkong & Whampoa Dock Co., Ltd.	10
Honolulu Iron Works Co	17
Hupeh Cement Co	58
Imperial Railways of China.	63-64-65-66-67
International Banking Corp	Cover
International Steam Pump Co.	71
Island Boat Works	95
Inter'l Correspondence Schools	69
Jardine, Matheson & Co	29
Johnson-Pickett Rope Co	70
Kawasaki Dockyard Co. Ltd	7
Kiangnan Dock & Engineering Works	8
La Prueba	53
Lima Locomotive Works.	21
Lodge & Shipley Machine Tool Co.	31
Macdonald & Co.	77
Malthoid	70
Manila Trading & Supply Co	78
Manila Railroad Co	92-93
Melchers & Co	16
Middleton & Co. Ltd	20
Michigan Steel Boat Co	70
Mitsu Bishi Dockyard & Eng. Works	38
Mitsui Bussan Kaisha	90
Morse & Son, A. J	452
Murray, Wilbur H. Mfg. Co	70
Mustard & Co.	76
New Engineering and Shipbuilding Works, Ltd	11
New York Engineering Co.	32
New York Shipbuilding Co	89
Nicholson, C S	6
Niles, Bement & Pond Co	99
Nippon Yusen Kaisha	53
North British Locomotive Co. Ltd.	19
Olsen & Co., Walter E	Cover
Osaka Iron Works	85
Pacific Mail S. S. Co	53
Pacific Tank and Pipe Co.	102
Paraffine Paint Co	102
Philippine Islands	2
Port Banga Lumber Co	15
Priestman Brothers, Ltd.	59
Racine, Ackermann & Co	57
Remington Typewriter Co.	49
Remington Oil Engine Co	100
Riter-Conley Mf'g Co	13
Rose, Downs & Thompson, Ltd	76
Russo Asiatic Bank	1
Rendrock Powder Co	15
Riley, Hargreaves & Co., Ltd	41
Samuel & Co., Ltd	42
San Miguel Brewery	68
Santa Mesa Rope Works	13
Schuchardt & Schütte, Berlin	40-49
Shanghai Dock & Eng. Co., Ltd	34-35
Shanghai Gas Co., Ltd	32
Shanghai Machine Co.	81
Shewan, Tomes & Co.	28
Siemens China Electrical Engineering Co.	47
Southern Pacific Co	30
South Manchuria Railway Mining Dept.	3
South Manchuria Railway	14
Standard Oil Co. of New York	45
Stevenson & Co., Ltd., W. F.	7
Stettiner Maschinen Bau, A. G.	83
Strong, Frank L.	67
Superior Wrench Co.	33
Swift & Co	48
Taikoo Dockyard and Engineering Company of Hongkong, Ltd.	9
Thompson F. H	69
Toyo Kisen Kaisha	37
Trussed Concrete Steel Co	49
Tsingtauer Werft	88
United States Steel Products Export Co	24-25
Vanderloo & Co., F. A	84
Vickers Sons & Maxim Ltd	39
Vulcan Iron Works	62
Vulcan Iron Works Ltd	13
Wen Ming Press	7
White & Co. (Inc.). J. G	6
Western Electric Co	17
Westinghouse Brake Co., Ltd	61
Western Valleys Anthracite Co.	102
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Ynchausti & Co	31
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Young, C. G	69
Zimmerman Steel Co	61

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Special Supplement to
THE FAR EASTERN REVIEW
May, 1911

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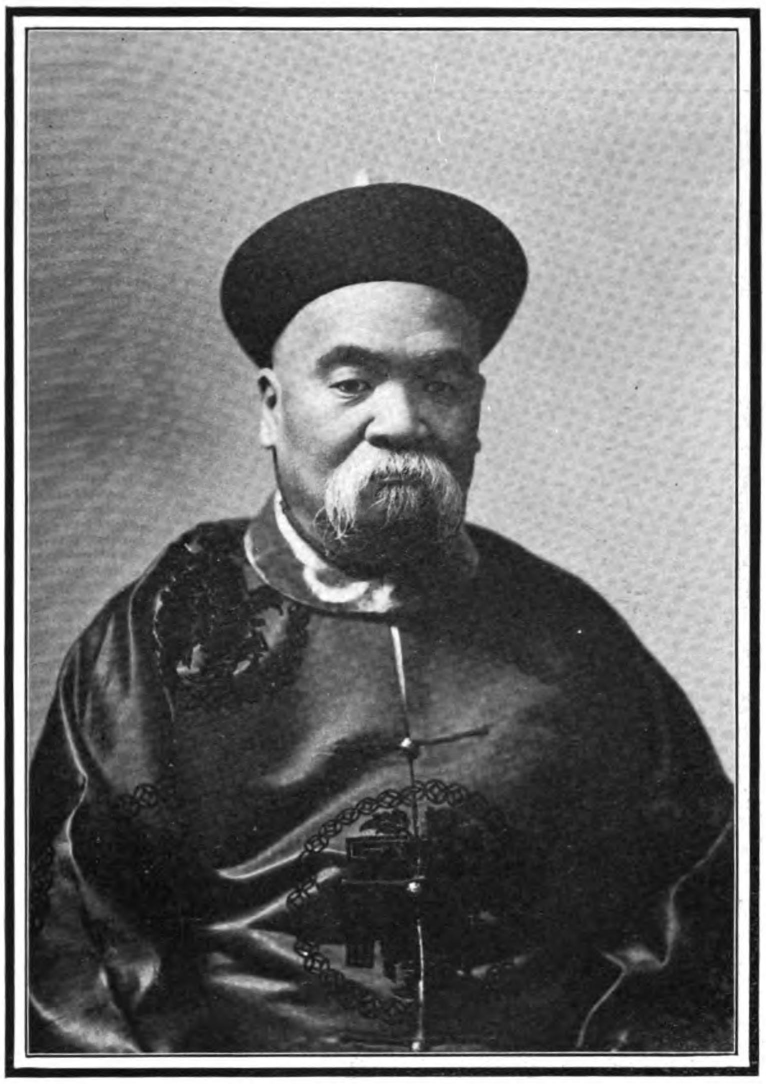
His Excellency HSU SHIH-CHANG

FIRST VICE-PRESIDENT OF THE CABINET

His Excellency, LIANG TUNG-YEN

Minister of Foreign Affairs



H. E. TSOU CHIA-LAI

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Admiral T'ANG HSUEH-HENG

Vice Minister of the Navy

H. E. LU JUNG-HSIANG

President of the Privy Council

H. E. CHAO EHR-HSUN

Promoted from the Viceroyalty of Szechuan to that of Manchuria with Combined Powers of Imperial High Commissioner and Tartar General

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H. E. NA TUNG
Second Vice President of the Cabinet

H. E. JUNG CHING (KUNG-PAO)
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Minister of Posts and Communications

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His Imperial Highness, Prince YU-LANG
Joint Minister of the Military Council

His Highness, SHANG-CH'I; Prince SU
Minister of the Interior

His Excellency General YIN-CHANG
Minister of War

His Imperial Highness, Prince TSAI HSUN

Minister of the Navy, Brother of the Late Emperor KUANG HSU and of Prince C'HUN, The Regent

From a recent Photograph for exclusive publication in *The Far Eastern Review*

THE FAR EASTERN REVIEW

COMMERCE • ENGINEERING • FINANCE

VOL. IX. MANILA, P. I., SHANGHAI, AND YOKOHAMA, MAY, 1911 No. 12.

CHINA'S CABINET

THE IMPERIAL FAMILY

The Emperor of China, and his father, the Regent.

The Emperor and his Father and Mother, the Prince and Princess of C'hun.

From Chinese Paintings

News from Peking states that the organization of the new Cabinet and Advisory Board was formally passed by the Government Council on April 27th, and later made public officially on May 8th. Many schemes had been proposed and rejected, but the old situation apparently remains unchanged, for notwithstanding all the shuffles and revisions, the Grand Council idea is still preserved, and instead of a real Cabinet responsible to the National Assembly, the new body will for all purposes be the same as the old Council, responsible to the Throne for its actions, and presided over by the same old office holder and leader, Prince Ching. Until such time as the Empire has an established Parliament with full powers over legislation, it is natural some one leader must dominate the affairs of the country, and so long as the prime occupation of the Grand Council or Cabinet consists in shuffling officials around from one post to the other, and collecting the proceeds of the sales of office, some one strong member of the Imperial Clan must hold the reins to insure the full share of the spoils for the Imperial Coffers. As there are only two or three members of the Imperial Family whose age and experience in public affairs qualifies them for this most important post, it is again natural that one of them should continue to direct the politics and government of the Empire. So the list of eligible princes, qualified to head a responsible Cabinet, narrowed down to Prince Ching, Duke Tsai-Tse and Prince Yu Lang.

There are other princes of the Pu generation, such as Prince Kung and Pu-lun who, while capable and intelligent, lack the age and experience to cope with the astute old officials who have climbed step by step the ladder of Chinese official life. Duke Tsai Tse, the Minister of France, loomed large on the horizon as a candidate for the mantle of Prince Ching, and the post of Premier. A strong party had gathered around this capable and efficient official, and his chances of being called to preside over the cabinet seemed favorable. Prince Yu Lang, one of the eligibles, was finally offered the post of Vice President of the Cabinet, which he refused, preferring to devote his whole attention to the Army, and the selection narrowed down to Prince Ching, and Duke Tsai Tse. The former, fearing that the responsibility would be too great, followed the customary tactics of all Chinese officials when they feel certain of a high appointment, and begged to be excused and permitted to retire. After a decent interval of time, certain of his declining, the formality of tendering the honor to Duke Tsai Tse was duly performed. The Regent then sent the colleagues of Prince Ching to call at his residence and announce the Throne's decision that if he again refused to accept this office the Cabinet system would never be promulgated. And to save the country, the Prince of Ching consented to reconsider the matter and finally accepted the post of Premier of the new Cabinet.

The main idea prevailing throughout the entire scheme seems to have been guided by the desires of the Grand Council to retain its power and prerogatives. The former Grand Council consisted of Prince Ching, Prince Yu Lang, Hsu Shih Chang and Natung, and the new cabinet scheme provides for a President and two Vice Presidents, and the Ministers of the eleven Boards. Prince

THE FAR EASTERN REVIEW

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CONTENTS

	PAGE
China's Cabinet	453
The Four Nation Loan	457
China's Railway Tangle	461
Foreign Advisers to China	462
American Financial advisers to Persia	464
U. S. Commercial Agent to Orient	465
Yellow Journalism a Menace	465
The Kirin Changchow Railway	466
The Canton-Kowloon Railway (Chinese Section)	468
Formosan Sugar Industry	474
Y. M. C. A. Building at Peking	482
Development of Visayan Trade and Industries	483
Reviews	484
Vulcan Shipyard at Hamburg	484
The Flying Fish	486
Steel Wire Concrete Reinforcement	487
Shanghai Native City Electric Light Plant	490
American Locomotive for Japanese Railways	491
British Locomotive for the Shanghai Nanking Railway	491

Ching has been made President, and Na Tung and Hsu Shih Chang the Vice Presidents, while Prince Yu Lang has been appointed minister of the Military Advisory Board with Prince Tsai Tao.

The Cabinet scheme as accepted is as follows, though some modifications were made: A president—only Princes of the three classes, or Dukes, or those with other high hereditary ranks, were eligible for the position.

Two Vice-Presidents.—Only Grand Secretaries of the Six Halls and Palaces to be appointed.

Ministers-of-State.—Number uncertain, they were to be filled by the Presidents or Ministers of the Ministries and Boards.

Four Secretaries and Councillors, (two each) only Sub-Chancellors and Readers of Compilers of the Grand Secretariat and the Hanlin College are eligible to occupy such posts. The rest consists of five Departmental Directors, ten managers and ten compilers.

When there are important affairs, officials specially appointed by the Throne may attend or assist the Cabinet.

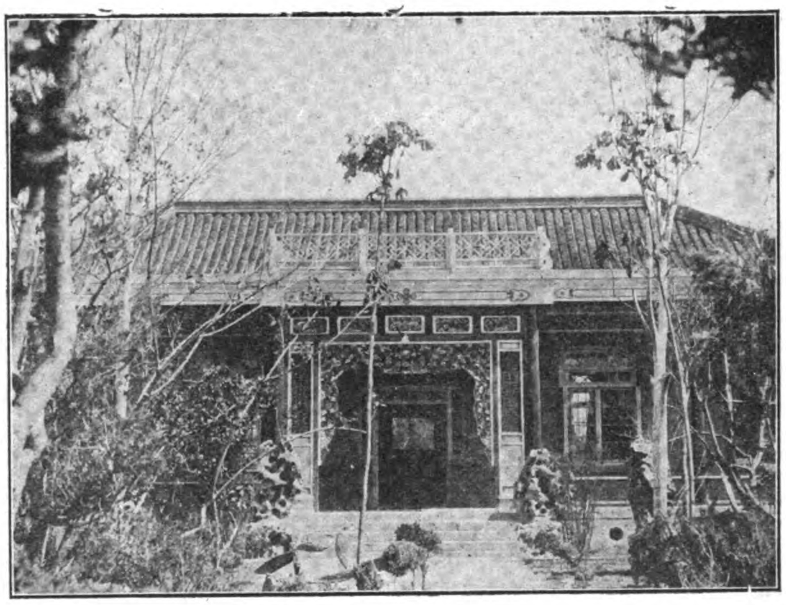
—(1) The Cabinet Ministers shall assist their Sovereign and assume responsibility for him in the Government of the Empire. (2) The President shall ascertain Imperial wishes and perform duties of the State. (3) The Vice-Presidents shall render assistance to the President in the Administration of the Government. (4) The Eleven Ministers shall each attend to the affairs of their respective Ministries. (5) When the Cabinet Ministers are confronted with too much business, officials may be appointed by Imperial Edicts to the Cabinet for assistance and consultation, and their number is not limited. (6) Cabinet Ministers shall not be allowed to hold other appointments or offices of importance concurrently. (7) The President and the Vice-Presidents shall attend the daily Audience; the Ministers of the Ministries shall meet in conference once in every five days.

(8) Cabinet Ministers shall sign their names on all the Edicts or Decrees and assume responsibility for same. To Decrees on affairs of secrecy, only the President and the Vice-Presidents shall sign their names.

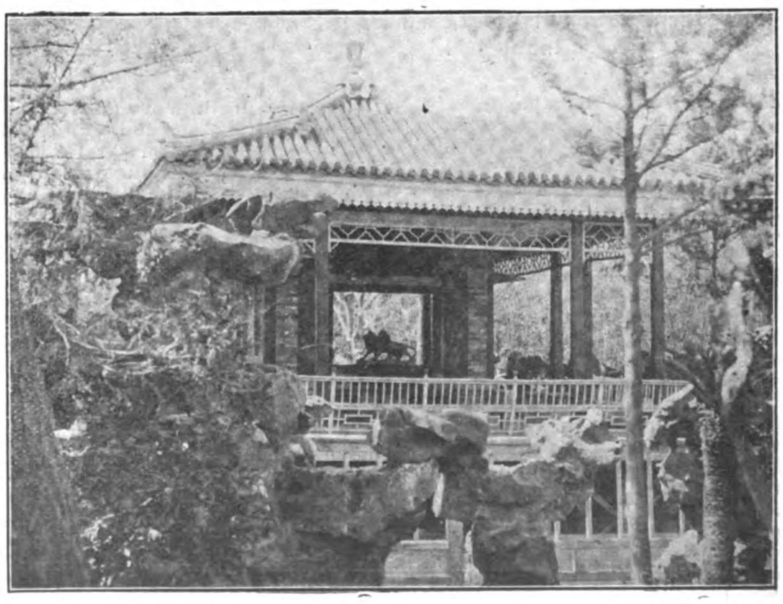
(9) When Cabinet Ministers submit any memorial affecting the Empire's administration as a whole, the President and Vice-Presidents shall sign their names in conjunction with those of Ministers of the Ministries.

(10) On occasions of deliberation on matters of weight and importance, the President shall be the Chairman.

(11) Regarding affairs within the office of their duties, the Presidents and Vice-Presidents may issue Cabinet Orders (Council Orders.)



THE HOME OF H. E. YUAN SHIH-KAI.



PAVILION IN THE GARDENS OF H. E. YUAN'S HOME.

HIS HIGHNESS PRINCE CHING AND OTHER PROMINENT OFFICIALS OF THE WAIWUPU, CHINA'S FOREIGN OFFICE

Reading from Left to Right:—

TSAO YU-LIN, vice-president; W. W. YEN, councillor; CHEN NIAO TING, councillor; TSOU CHIA-LAI, junior president; LIU CHING-SUNG, councillor; TSENG TSI-TSING, senior councillor; WEN PU, councillor; H. R. H. PRINCE CHING, imperial president; S. K. ALFRED SZE, deputy vice-president; CHOW TSZ-HI, councillor; NA TUNG, senior president; LIU CHING-SUNG, councillor; HOO WEI-TEH, senior vice-president; LIAO NGAN-TOW, councillor; B. C. WAN, councillor; CHENG TSENG-YAO, councillor.

JUST FISHING

HIS EXCELLENCY YUAN SHIH-KAI AND HIS BROTHER ENJOYING LIFE. YUAN IS POLING WHILE HIS BROTHER FISHES.

(12) The two Secretaries, Senior and Junior, shall frame the draft of Edicts, publish or read the memorials and telegrams, control the daily routine of business, and appoint and dismiss all officials, in pursuance to the Orders of the Presidents and Vice-Presidents.

It is also said that six departments will be created, viz:—Edicts or Decrees; Merits and Services; Law Enactments; Casting of Seals; Audit; and Compilation.

The Grand Council is still the Grand Council, and reserves to itself its old functions of daily audiences with the Throne, and the power to sign edicts of importance, while all them members must sign the routine edicts and assume their share of responsibility.

Following the appointment of Prince Ching as President of the Cabinet and Na Tung and Hsu Shihchang as Vice Presidents, the Edict proceeds to name the heads of the different State Departments.

Foreign Minister—Liang Tun Yen was appointed Minister of Foreign Affairs. The selection of this eminent statesman will surely meet with general approval. He typifies the trend of China's modern policy to regulate her foreign loans so as to avoid encouraging the "spheres of influence" menace. Liang Tun Yen was among the students who returned from America twenty-five years ago. He was right hand man of the late Chang Chih-tung for many years and by training is eminently fitted for the position. Chou Chai-lai will be acting Minister until the return of Liang Tun Yen from America.

Minister of the Interior—Shan Ch'i (Prince Su), who has been appointed Minister of Internal Affairs, was appointed president of the Board of Interior in 1907 and Commissioner of Naval Reorganization in 1909.

Minister of Finance.—Tsai Tse, new Minister of Financial Affairs, is recognized as an official of promise. In 1905, he was chief of the Imperial Mission to foreign countries, served on the Reform Commission in 1906, appointed president of the Board of Finance, 1907 and as member of the Commission of Naval Reorganization in 1909.

Minister of Education.—Tang-Ching-Chung, Minister of Education, has served in a number of official capacities among which was his appointment as vice-president of the Board of Works in 1902, Literary-Chancellor, Kiangsu, 1904, Board of Civil Applicants, 1906, senior Vice-President, Board of Civil Office, 1907, and President, Board of Education, 1910.

Minister of War.—General Yin Chang, the Minister of War, is an official eminently fitted for this important portfolio at a time when the important program for the reorganization of the Chinese Military forces requires unusual force of character and experience in modern military methods. It will be remembered that he returned from Berlin to accept the presidency of the Board of War last year and has been very active in furthering plans for carrying out a comprehensive military scheme. He served as minister to Germany from 1901 to 1905 when appointed director of the Nobles College. The following year he became provincial commander-in-chief of the Kiangpei forces and was appointed Vice-President of the Army Board in the same year. In 1908 he was reappointed minister to Germany and the same year acted as inspector of the Autumn Maneuvers at Anhui before proceeding to his post. His latest appointment was that of Inspector General of Division in the vicinity of Peking.

Minister of Naval Affairs:—Prince Tsai Hsun, the Minister of Naval Affairs, brother of the late Emperor Kuang-Hsu, has been one of the most active of the Imperial Princes in furthering the Naval program. In 1909 he was appointed High Commissioner of Naval Reorganization and proceeded on a Naval Mission to Europe in October of that year. In July, 1910, he was appointed consulting member of the Government Council and in August of the same year proceeded on a Naval Mission to Japan and America.

Minister of Justice.—Shao-Chang, Minister of Justice, was appointed Secretary Board of Foreign Affairs in 1901; Sub-Chancellor of the Grand Secretariat with rank of Vice-President, Board of Ceremonies in 1905; Senior Vice-President of the Board of Punishments in 1906, and Vice-President Board of Laws, 1906.

Minister of Agriculture:—Pu Lun, Minister of Agriculture, Industry and Commerce, is a prince of the 4th Order, and among his many appointments he served as Imperial Commissioner to the St. Louis Exposition, president of the Tz'u Cheng Yuan, or Senate, 1907, special service in selecting site for the late Emperor's tomb, and was appointed Lieut. General of the Plain White Banner in 1910.

Minister of Posts and Communications.—Sheng Hsuan-Huai, Minister of Posts and Communications, has been identified since 1886 with the development of lines of communication throughout the Empire, as director of the Chinese Telegraph administration. He was appointed customs taotai of Chefoo (1886), and of Tientsin (1892). In 1896 he was made administrator of the Lu-Han and Southern Railways; in 1901, guardian of the heir-apparent; in 1902, Senior Vice-President of Works and Commissioner for Treaty Revision; Junior Vice-President of the Board of Communications, 1908; President of the Red Cross, 1910; and especially appointed to assist the Board of Finance in currency matters in August, 1910.

Minister of Dependencies. — Shou Chi, Minister of Dependencies, has had an active official career of which the first appointment leading to his recognition in this deparment was that of the Mongolian Superintendency in 1900.

In 1907 he was advanced to the position of President of the Board of Dependencies and in the same year became a member of the Government Council. In 1909 he was named as Assistant Superintendent of the Hatamen Octari.

Minister Military Advisory Council—Prince Tsai Tao, brother of the late Emperor, and Prince Yu Lang, as previously mentioned, were appointed Joint Ministers of the Military Advisory Council. Prince Tsai Tao has been active in Military Affairs since 1908 when he was charged with the formation of the New Imperial Guard. In 1909 he was appointed Chief of the General Staff and proceeded on a mission to Japan, America and Europe to study military matters in 1910.

Prince Yu Lang has been active in police and military matters since 1905 when he was appointed President of the Board of Police. He assisted Prince Tsai Tao in the formation of the Imperial Body Guard in 1908 and was appointed General Commander of the Peking Gendarmerie in 1909. He became a Grand Councillor in August, 1910.

President of the Privy Council—By the same decree Lu Jun hsiang, former Grand Secretary and now High Commissioner for Opium Suppression was named as President of the Privy Council with Jung Ching, President of the Board of Ceremonies, as Vice-President.

Besides announcing the appointments the Imperial Edict reviews the imperial progress towards the establishment of the Cabinet Council. The original decree of last year, followed by the memorial of the Commission of Constitutional Reform presenting a preparatory program to that end; then in due course followed the joint memorial of the Commission of Constitutional Reform and the Council of State Affairs setting forth in detail the new Cabinet-Council system and as the Edict reads:

"We have perused it carefully and found that its provisions based on the constitutions of the foreign constitutional monarchies and revised to conform to the conditions at present prevailing in China, and that they have been very carefully compiled and are fairly satisfactory. They have also submitted that as the Cabinet system is a new thing introduced into the Chinese system of government for the first time it should be enforced cautiously and considered as an experiment, and have with that object in view drawn up fourteen provisional regulations for the management of public affairs by the Cabinet. The said regulations in some respects increase and in others curtail the power of the Cabinet and are acceptable. We have received the princes and ministers of the Council of State Affairs in audience and personally asked them to express their opinions, which are practically all the same. We hereby order that the Cabinet official system be promulgated and carried into effect and that the same be enforced and a Cabinet Council be established in accordance with the aforesaid provisional regulations as an experiment. With the exception of the Privy Council system, which is promulgated at the same time as the Cabinet official system, the official systems of the offices subsidiary to the Cabinet and the Metropolitan and Provincial official systems and regulations are hereby ordered to be speedily drawn up in accordance with the program of Constitutional Reform and submitted to Our approval for promulgation and enforcement, so that Our intention for carrying out constitutional reforms and making the country strong and powerful may be realized."

LU-CHING
COMMISSIONER OF EDUCATION, MUKDEN

TAOTAI HAN KAO CHIEN
COMMISSIONER OF FOREIGN AFFAIRS FOR THE MANCHURIAN VICEROYALTY

THE "FOUR NATIONS" LOAN

The conclusion of the currency loan negotiations brings to an end the first skirmish of one of the most stubbornly contested diplomatic struggles of the last decade, with the honors of victory to the American Secretary of State and his lieutenants in the field, Minister Calhoun and Willard D. Straight. The stake at issue has been the integrity of China, menaced by the aggressive policies of Russia and Japan, involving another clash between these two powers in which the neutrality of China would again be violated, and Manchuria subjected to the horrors and ravages of another war for its possession. We pointed out, over a year ago, that there was no good or legitimate reason why a war between Russia and japan should be fought on Manchurian soil unless the possession of that territory was the objective prize. Russia has been making strenuous endeavors to strengthen her forces east of Baikal and regain her lost position, compelling Japan in self defense to adopt aggressive measures in Manchuria to safeguard her hard won fruits of victory. There can be no doubt if events had been allowed to take their course, another year would have witnessed a renewal of hostilities between the two powers, with Russia in a more favorable position to win the victory on land. In this event, Japan would be compelled to vacate Manchuria, relinquish Korea, and revert to her old position with Russia threatening the very existence of the Island Empire, and Manchuria irretrievably lost to China.

It was this condition of affairs which influenced Mr. Knox, the American Secretary of State, to propose the neutralization of the Manchurian railways, as the most effective means of preserving the peace of the East, and the integrity of China's Three Eastern Provinces. The firm refusal of Russia and Japan to consider a proposal emanating from the highest motives on the part of America, served to create the feeling throughout the world that despite their oft repeated assurances to the contrary both powers had ulterior designs on China's territory.

This doubt became a firm conviction, when the same powers supported by their allies, Great Britain and France, opposed the construction of the Chinchow-Aigun Railway, a line which would have enabled China to defend the neutrality of Manchuria in the event of hostilities between Japan and Russia. China was bulldozed into temporarily relinquishing her undisputed rights to construct railways within her own territory without first consulting the wishes of her neighbours, thus creating a dangerous and iniquitous precedent, boding ill for the progress and peace of the Empire, and reasserting in no uncertain manner a reversal to the old sphere of influence policy and the utter collapse of the Open Door doctrine.

This railway line was to have been financed by America, and constructed under contract by a British firm. The attitude of the British Government, in refusing to support their own nationals on the grounds that the contract conflicted with the Scott-Muravieff sphere of influence agreement of 1898, which had not been abrogated, only intensified the situation, and isolated America at the outset of her re-entrance into the world of Far Eastern politics. The situation revealed America standing apparently alone for the maintenance of the Open Door principle and its application to Manchuria, incurring the deep resentment of Russia and Japan, who professed to see selfish motives in her attitude.

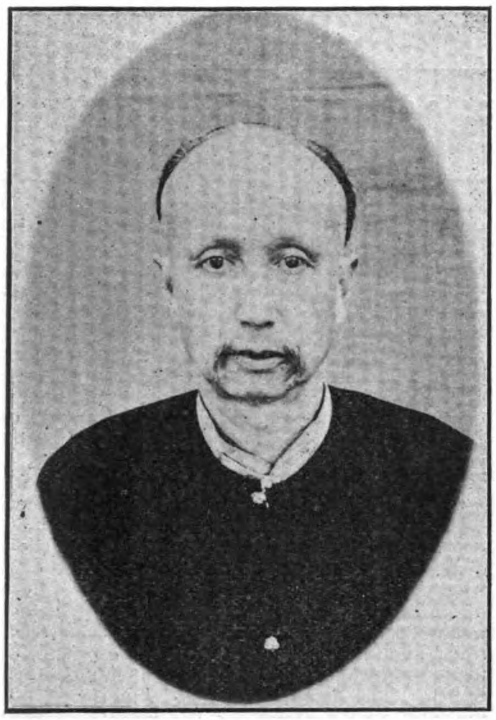
It is perhaps unfair to Russia and Japan to impugn their good intentions towards China, and concentrate the fierce light of publicity on their policy in Manchuria, and ignore similar conditions in other parts of China where European powers have the same rights and spheres of influence. The only answer to this lies in the fact that the press of other countries refrain from commenting on the shortcomings of their own national policies and magnify the situation in Manchuria to divert attention from their own spheres. Germany in Shantung, France in Yunnan and Great Britain in Hongkong hold the same relative position to China, as Russia and Japan do in Manchuria. The efforts of the Chinese to build the Chefoo-Weihsien Railway and develop the port of

H. E. HSI-LIANG,
WHO RETIRES FROM THE VICEROYALTY OF MANCHURIA, TO GIVE PLACE TO H. E. CHAO EHR-HSUN.

H. E. CH'EN CHAO-CHANG,
GOVERNOR OF KIRIN PROVINCE.

CHANG YUAN-CHI,
COMMISSIONER OF CIVIL OR INTERNAL AFFAIRS TO THE FENGTIEN GOVERNMENT.

HIS EXCELLENCY CHOU SHU-MU,
GOVERNOR OF HEILUNGKIANG PROVINCE (TSITSIHAR)



H. E. SA-LIEN
VICE PRESIDENT OF THE BOARD OF CEREMONIES

Chefoo, as an offset to Tsingtau, has, according to Chinese official reports, met with the decided opposition of German interests, though the incident has never been permitted to reach the acute diplomatic stage. China is barred from connecting her central provinces with the sea by a direct railway outlet through Shantung, without strengthening Germany's hold on the province, and she is now seeking to offset this advantage by the construction of the Kaifeng-Haichow line, and a deep water port at the latter place. In principle the situation is identical with the one in Manchuria. Deprived of Port Arthur and Dairen, her best harbors in the North, China intends to create a new ice free port at Halutao, and

H. E. TSEN CH'UN-HSUAN,
ONE OF CHINA'S GREAT EXECUTIVES NOW IN RETIREMENT. HIS REAPPOINTMENT TO OFFICE HAS BEEN STRONGLY URGED.

construct the Chinchow-Aigun Railway for strategic and commercial reasons, but Japan and Russia have temporarily blocked these

H. E. SHEN CHIA-PEN
UNTIL RECENTLY, VICE PRESIDENT OF CHINA'S FIRST CONSTITUTIONAL ASSEMBLY

measures to preserve their hold on the territory and insure a profitable return on their railways. The attention of the world is skillfully focussed on Manchuria, while the identical situation in Shantung is never discussed.

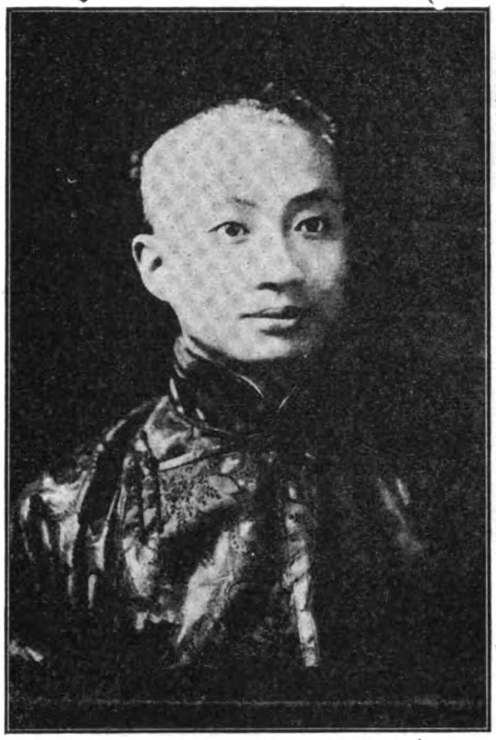
In the Peking Agreement of 1905 China bound herself not to construct railways in Manchuria, parallel to or competing with the Japanese South Manchuria line, and when the Fakumen line was proposed Japan insisted on her interpretation of a very indefinite clause to prevent its construction.

But a similar clause exists in the Shanghai-Nanking and Canton-Kowloon Loan Agreements entered into with Great Britain, prohibiting the construction by China of competing lines between these points.

France in Yunnan holds the same relative position. Her Yunnan railway makes Haiphong in Indo-China the port of the Upper Yangtsze region, and she has also opposed the construction of any lines in South China which might weaken her influence over this sphere. Here also China is at present engaged in surveying a line from Yunnan to the Sea by the way of the West River valley, as an offset to the French line and to divert trade into her own port at Canton, or some other outlet at the delta.

H. E. SHIH SAO CHI (SAO KE ALFRED SZE)
JUNIOR COUNCILLOR OF THE BOARD OF FOREIGN AFFAIRS. IMPERIAL REPRESENTATIVE AT THE INTERNATIONAL PLAGUE CONFERENCE AT MUKDEN (GRADUATE OF CORNELL.)

H. E. LIU JO-TSENG
VICE DIRECTOR OF THE HIGH COURT OF JUSTICE, THE SUPREME COURT OF CHINA.



H. E. TSAO JU LIN

SENIOR VICE PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS

H. E. LI CHIA-CHU

VICE PRESIDENT OF THE BOARD OF EDUCATION

H. E. NA CHIN

SECRETARY OF THE INNER COUNCIL, BROTHER OF NA TUNG

As Russian influence predominates in Northern Manchuria and Japanese in the South, so does Germany exert her influence in Shantung and France in Yunnan. While no direct charges of violations of the Open Door principle in these other spheres have been advanced, the trade is firmly in the hands of the countries holding the advantage, and the German merchants in Shantung and French in Yunnan outnumber those of all other nationalities, the same as the Russians and Japanese do in Manchuria. With the same intense international competition for the control of the Yunnan or Shantung markets as exists in Manchuria, the same conflict of national interests and charges of preferential treatment must inevitably develop.

The principle underlying the opposition of Russia, Japan, France and Great Britain to the construction of the Chinchow-Aigun line if admitted as a precedent meant a complete breakdown of the Open Door policy, a reversal to the spheres of influence, denial of China's sovereign rights to build lines within her own territory, effectively blocking her progress, with partition as the inevitable sequel. The establishment of the principle gave to Germany the right to block the construction of the Kaifong-Haichow Line, to France, the proposed Yunnan-Kwangsi project, and Great Britain the westward trend of the Yunnan or Szechuan-Tibet roads, while Russia could check any move on the part of the victim to develop or defend Mongolia or Sinkiang by the extension of railways.

Japan had consented to the construction of the Chin-Ai line with certain concessions, but Russia stubbornly rejected every modification of the scheme as threatening her strategical position on the Amur. The principle seemed in a fair way to be established and the work of years of constructive diplomacy set at naught. Knox's statesmanship was ridiculed as having brought no prestige to America, and the American group of financiers, who had patriotically entered the field at the earnest solicitation of the Government, were charged with endangering the peace of the country through desire for private profit by the exploitation of China. There seemed little hope of altering the situation, except through friendly diplomatic negotiations with Russia, with no certainty of overcoming her opposition.

It was at this juncture that the present currency loan was broached, and a preliminary agreement drawn up by the Chinese authorities

H. I. H. PRINCE TSAI JUN.

PRESIDENT OF THE NOBLES' COLLEGE AT PEKING

H. I. H. PRINCE PU LUN

HIS EXCELLENCY HSU SHIH CHANG, GRAND COUNCILLOR.

H. E. JUI CHENG
VICEROY OF THE HU KWANG

LIEUTENANT GENERAL TSENG-CHI, OF THE MONGOL PLAIN YELLOW BANNER CORPS; TARTAR GENERAL AT CANTON; AN ASPIRANT FOR THE POST OF VICEROY OF MANCHURIA

and the American Minister at Peking, which was duly signed and accepted by the temporary representative of the American Group. This agreement stipulated that the loan was to be purely American in character and employed for the reform of the currency and certain industrial developments in Manchuria. The American Group in signing this preliminary agreement were fully aware of the difficulty of successfully floating the bonds on the American market, and were prepared to take up the entire issue out of their own resources if necessary to support their own Government and preserve the confidence of China.

The fact that a New York City Loan of a few millions was difficult to float in the American market has been used by the opponents of the Administration and rivals of the Group to indicate their inability to handle this loan successfully. And as usual this story has circulated around the world, and nearly every paper in the East enlarged on it without any knowledge of the peculiar conditions surrounding the floating of a 4% Municipal loan in America, when other more profitable railway and industrial issues are on the market. It is self evident that when a combination of Morgan, Rockefeller, and Kuhn Loeb & Co. affix their name to an agreement of $50,000,000, their immense resources fully enable them to carry it through, even though the entire issue be locked up in their own vaults as their own investment.

The purely American character of the loan isolated still further that country, and, with the application of $15,000,000 to Manchurian industries, placed the sole responsibility of maintaining the neutrality of the province on America, and placing her in direct conflict with the terms of the recent Russo-Japanese Agreement. Followed to its logical end, it meant that America must assume, unaided, the task of preserving the neutrality of China against the alleged designs of Russia and Japan.

There were many good and sufficient reasons why the other powers through their financial groups should be invited to participate in this loan. As they would be the greatest losers by the establishm.nt of a stable currency in China, common equity demanded they be allowed a share in the profits of the loan. But higher political reasons made it almost imperative that the European Groups should participate on equal terms, so as to effectively bring about the partial neutralization of Manchuria.

Had the American Government been actuated by the mercenary spirit charged by its critics and William J. Bryan, and if the so-called Dollar Diplomacy was only a disguise for advanci g the special interests of Wall Street, regardless of future national entanglements, the $50.000.000 loan would have remained purely American, and the profits kept at home.

The agreement, signed in London last October between the four groups to participate equally in all future loans to China, included in its provisions the purely American currency loan for $50,000.000 and also the American-Chinchow-Aigun loan for $30,000,000. And here at the outset the Americans demonstrated to the world that they were faithfully adhering to their traditional policy of equal opportunity in China. For a while it looked as though the Chinese Government would decline to admit the participation of the other groups, and would hold to the letter of the preliminary agreement, providing for a purely American loan. This temporary opposition, however, disappeared when the full signifi-

H. E. CHANG JEN-CHUN
VICEROY OF THE LIANG KIANG

H. E. LI CHING-HSI
VICEROY OF THE YUN-KUEI

CHINA'S RAILWAY TANGLE

Now that the currency loan negotiations have been brought to a successful termination, China has time to turn her attention to the perplexing railway problem which confronts the country through the opposition of the provinces to the application of such foreign loans as are manipulated through the central authorities at Peking. Until this question of authority is definitely settled, railway development will continue at a standstill, and progress be delayed. The crux of the situation lies in the provinces of Hunan and Hupeh where the gentry have openly threatened to revolt if the foreign Hukwang loan is applied to the construction of the Canton-Hankow-Szechuen lines.

Public opinion, in Hunan especially, is unanimous on the point of building their portion of the southern trunk line with their own funds, and heroic measures are apparently being taken to raise the necessary annual allotment on the shares to carry on the construction. But the funds are slow in materializing, and with the waste and extravagance and judging from the progress made to date, only a small portion seems to be expended in actual construction work. However, the Hunanese are supremely satisfied and elated over their success in thwarting the use of foreign funds, and hold their heads high as great patriots whose example should be followed by all other provinces. And in the face of such opposition the Central Government at Peking seems powerless to impose its will. Events are moving rapidly in China, and the signs of the times point to troublous days for the Empire in the near future, and further humiliation seems inevitable unless the government is prepared to preserve its prestige by a show of force at the critical moment. The Throne has compelled the Viceroys and Governors to recognize the Central authority over the new army, the command of which is now firmly under the Minister of War. Millions are annually expended in the feverish haste to organize and perfect the 36 new army divisions, and the provinces have recognized the urgency of this step, and are readily contributing every support to the new military program. On all sides China is having troubles with her neighbors: Russia on the North, Japan on the Yalu, France and Great Britain in Yunnan have all raised issues with China over the boundaries, and China in her defenseless state must always yield the point. Revolutionary societies in the South are a constant menace to the peace of the Empire, and a resolute leader could readily set up the standard of revolt, secure in the knowledge that lack of transportation with the North would facilitate his campaign and chances of success. When the hour strikes for China to mobilize her new army at any given point, the lack of transportation will impossibilitate the movement, and humiliation again will be her lot. The high spirited, proud and patriotic Hunanese whose stiff necked prejudice prevents the linking together of North and South, will then go down in Chinese history and be execrated by their countrymen as the real cause of defeat. The safety of the Empire demands the construction of this line without delay, and it would be far better for the Imperial authorities to brave the threatened revolt at once, than continue to jeopardize the integrity of the country by further parleying with the misguided patriots of Hunan.

If the Throne had the power to centralize the command of the new army under the Ministry of War, for the best interests of the Empire, identical urgent reasons of State demand that the same policy be adopted with regard to the railways, as without the latter the army is helpless, and the huge sums expended in its creation and organization will be wasted. Either the Hunanese should immediately give sufficient guaranties of their ability to construct this line without further delay, or the Imperial Government should assert its prerogatives and proceed to build it, by force if necessary.

And the same argument holds good with other provincial lines, whose promoters are obstructing the progress and safety of the Empire through mistaken ideas of provincial rights.

H. E. WU TING-FANG,

RECENT MINISTER TO AMERICA. IT IS RUMORED THAT HE WILL BE CALLED TO TAKE THE POST OF JUNIOR PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS.

H. E. LIANG SHIH-YI

DIRECTOR GENERAL OF RAILWAYS, REMOVED FROM OFFICE AND THE POST ABOLISHED BY THE NEW PRESIDENT OF THE BOARD

TAOTAI K. Y. KWONG

FORMER CHIEF ENGINEER OF THE CANTON-HANKOW LINE, TRANSFERRED TO DIRECT THE CONSTRUCTION OF THE KAIFENG-HAICHOW RAILWAY. EDUCATED IN AMERICA

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cance of the move was made apparent to the high Chinese authorities, and the negotiations then settled down to a discussion of minor points for the guarantee and supervision of the loan.

The final agreement stipulates that the revenues on tobacco, spirits, produce and the consumption tax in Manchuria, amounting to Tls. 2,500,000 and the salt surtax of all the provinces of China, amounting to Tls. 2,500,000 are pledged as security for the loan. And the neutralization scheme of the American Secretary of State, which was rejected by Russia and Japan and ridiculed and condemned by Europe, has been recognized and accepted in a modified form. Instead of America alone assuming the responsibility for the neutrality of Manchuria, Great Britain, France and Germany are now equally interested with her in this province, and the sphere of influence tendency has received another setback by the hypothecation of revenue from all the provinces.

It is natural that the terms of the loan should call forth sharp criticisms from the jingoistic Japanese press, who profess to see in the hypothecation of the Manchurian revenues a menace to their trade and political expansion in their peculiar sphere of influence. There is, however, little danger of foreign interference in Manchuria, while the revenues of the province are sufficient to meet the interest. So long as Manchuria is permitted to peacefully develop its enormous natural resources, its wealth and revenues will increase by leaps and bounds, and the occasion will never arise to justify foreign control of the revenues as a safeguard for the bondholders. The real menace to the prosperity and progress of this rich territory lies in the possibility of a conflict arising out of the ambitions of Russia to retrieve her defeat. If Japan's oft repeated declarations of friendship for China are sincere, and she harbors no designs on China's territory or sovereign rights, the Island Empire has every reason to feel well satisfied with the creation of a situation which effectively ties Russia's hands, and creates a buffer state between the Amur and the Yalu. The neutrality of Manchuria, which seemed such an idle dream, is brought within the realms of reality, and with this as an accomplished fact, the peace of the East is assured.

—G. B. R.

FOREIGN ADVISERS IN CHINA

Mr. J. K. Ohl, the well known Peking correspondent of the New York Herald, explains, in an article to his paper, the Chinese side of the argument against the further employment of foreign advisers for the various branches of the Chinese Government. This question assumed considerable prominence during the negotiations leading up to the final signing of the Currency Loan, through the persistent and erroneous reports spread broadcast that America had demanded the appointment of an American Financial Adviser to supervise the finances of the Empire and the application of the new loan, as a condition to advancing the funds. This report had its foundation in the fact that the American Group had insisted that a foreigner be appointed as a special auditor or inspector whose functions would be limited to certifying that the loan funds were expended according to the provisions of the new currency scheme, and not divested into other Channels. The

C. Y. YUN

ASSISTANT TO THE DIRECTOR GENERAL OF RAILWAYS. EDUCATED IN TROY POLYTECHNIC INSTITUTE 1884

TAOTAI K. S. LOW,

FORMER MANAGING DIRECTOR OF THE TIENTSIN-PUKOW RY., SOUTHERN SECTION. GRADUATE OF TROY POLYTECHNIC INSTITUTE. AT PRESENT HE HEADS THE SURVEY PARTY FOR THE PROPOSED LINE FROM YUNNANFU TO THE WEST RIVER VALLEY AT CANTON

YEN TE-CHING, C. E. DR. ENG., A. M. AM. S. C. E., ETC.

ASSISTANT CHIEF ENGINEER OF THE SZECHUAN RAILWAY. GRADUATE OF LEHIGH UNIVERSITY

TAOTAI CHOU HSUEH-HSI

PRESIDENT OF THE ANHUI RAILWAY, A SON OF VICEROY CHOU-FU

The Anhui, Kiangsi, Kiangsu, Chekiang, Lotung, Fukien and the Canton-Hankow lines are all in a state of financial collapse and unable to proceed with construction. Owing to the high rate of interest prevailing in China native capital is almost impossible to secure for railway development, and the outlook seems hopeless for any great construction progress emanating from this source. The Central Government refuses to guarantee the bonds of provincial companies, and foreign financiers decline to advance the funds unless this guarantee is forthcoming. The provincial promoters, however, persevere, and hawk their projects around the money market seeking some unsophisticated agent who will advance funds on local guarantees. Progress is checked, and construction work almost at a standstill awaiting the solution of the situation. The Imperial Government should assert its authority, take over the provincial lines and concessions, and proceed with their construction for the best interests of the Empire, or demand sufficient guarantees from provincial shareholders that a certain schedule of construction be maintained under penalty of forfeiting the concession.

—G. B. R.

TAOTAI JEME TIEN-YU

DR. ENG. A. M. I. C. E., ETC. CONSULTING ENGINEER TO THE YUCHUANPU. CHIEF ENGINEER OF THE SZECHUAN AND CANTON-HANKOW RAILWAYS. GRADUATE OF YALE.

importance of this loan to China is so great and far reaching that every precaution was necessary not only to guarantee the bondholders but to protect China itself against the possible dishonesty of her own officials. The discussions concerning the appointment of the inspector revealed a deep rooted opposition on the part of China to the employment of any foreigner in any capacity which made him independent of the Chinese Government. Mr. Ohl explains the real Chinese attitude towards Sir Robert Hart, around whose distinguished name a glamour of romance has been built.

"It may surprise persons unfamiliar with China to be told that invariably the first illustration cited by Chinese in this connection is Sir Robert Hart.

"In the Chinese criticism of Sir R. Hart there is no suggestion of lack of fidelity. So far as I have been able to discover, no Chinese questions the honesty and integrity of Sir Robert or the administration of which he is still the titular head.

"Those who voice the broader criticism are the progressive men of China, the men most keenly alive to the necessity of a regeneration of the government and the proper development of the country and who, therefore, are advocates of the employment of foreign experts as necessary instruments. These men hold in their hearts bitter resentment toward Sir Robert Hart as the man more responsible than any other for building up among the Chinese a sentiment antagonistic to foreign employes, and, in consequence, retarding China's development.

"They assert that since 1868 Sir Robert, with his own and other governments at his back, has kept the customs a wholly foreign institution. In all that long period of time not a single Chinese has been permitted to hold a position of responsibility in it, and yet it is a branch of the Chinese government.

"It is not that the Chinese begrudge the money or that they look at the question from a mere office holding viewpoint. They contend that Sir Robert Hart's administration has caused the Chinese people to believe that the employment of foreigners in any of the institutions of the Chinese government means foreign control of those institutions.

"If he had built up the customs administration as a truly Chinese and not a distinctly foreign institution, he would, the Chinese assert, have performed a vast service to this country and every progressive would to day be singing his praise. As it is, they feel very bitterly toward him."

And while his fellow countrymen may fairly resent any criticism of Sir Robert Hart's life work, they must be prepared to face the inevitable verdict history will direct against the action of their government in converting a distinctly Chinese department into a purely British bureau. To Sir Robert Hart as the head and organizer of the Imperial Maritime Customs, the world has ceded the honor and praise for the efficient and honest operation of a service, which in its inception and for years afterwards was an international institution. Its success and efficiency was based entirely on the fact that the service was open to all nationalities, and good, honest, earnest men sought and obtained posts, with the natural ambition of some day reaching the top of the ladder. It is a fact that in the early days and up to within ten years, Sir Robert's best lieutenants and commissioners were other than British, and the successful and honest working out of the system was due largely to their hearty and loyal co-operation.

H. E. SHENG KUN PAO,

PRESIDENT BOARD OF COMMUNICATIONS.

Then without any warning, to guarantee the British bondholders of Chinese securities, the British Government exact the promise from China that as long as British trade predominated in China, the Inspector General of Customs must be a British subject. Under existing conditions at that time, and in view of the many intrigues on the part of other European powers to secure the appointment for an official of their own nationality, the British Government acted wisely and well for its own interests.

But, in so doing, the door of equal opportunity, which had stood open for years and attracted the best men of all countries to the service, was slammed in their face, and they found instead of serving an international institution they were puppets in a British bureau, with no hope of ever reaching the top. Exigencies of politics amply justify British action, but they must be prepared to accept the inevitable results. No ambitious young man of American or other nationality selecting a career will enter in service whose highest positions are pre-empted by Great Britain. Already complaints are heard about the degeneracy of the service and the impossibility of securing good men to fill the vacancies. When Great Britain insisted that only a British subject could honestly administer the Chinese Customs to the satisfaction of British bondholders, it reflected on the honesty of other officials of the Customs. Now when the older men who made the service are retiring, and it needs strengthening with new blood, it is impossible to again enlist the sympathy and services of the best men of other nationalities.

As it is, Sir Robert Hart's policy, which built up the Customs as a purely foreign institution, and closed the door to those other than British, and his failure to grant some concessions to Chinese, has brought down on the service the distrust of the latter and indifference of other foreigners, and now if the service needs regeneration or new blood, Great Britain must either open the door to the higher positions or recruit the service from the best of her own.

Mr. Ohl continues and cites the case of Sir Robert Hillier as follows:

"The Chinese do not build their case on one experience alone. When, for instance, in talking with a high official of the Foreign Office, I repeated to him the general criticism of responsible officials for not availing themselves more freely of the services of Sir Walter Hillier, who for two years held the position of adviser to that department, his reply was:—'How could we? Whenever a case came up involving the British government he talked of 'we' and 'our Government,' meaning always the British government, not the government of China, which he was employed to serve."

These two examples are alone cited by Mr. Ohl as the reasons underlying the antagonism of China to foreign advisers. On the other hand there are instances where foreigners have subordinated their own national interests and given their best services to China's cause.

Sir Robert Bredon, the distinguished assistant to Sir Robert Hart, is a case in point. He paid the penalty however by forfeiting the support of his own government and other Britishers in China.

Dr. J. C. Fergusson for many years held the post of Foreign Secretary to H. E. Sheng Kung Pao when the latter was Director General for all the railways, and at the same time was Adviser to the Viceroys of the Liang Kiang and the Hukwang, and the Taotai of Shanghai. The highest tribute that can be accorded Dr. Fergusson is that he was intensely loyal to the country he served, and in faithfully and honorably discharging his duty' was invariably compelled to oppose the interests of his own countrymen. Sir Robert Bredon or Dr. Fergusson will never receive the appreciation of the interests they opposed, and their only hope of recognition must come from the Chinese Government.

There are other cases to the point, to fully vindicate China's intense antipathy to any further foreign interference through the appointment of advisers.

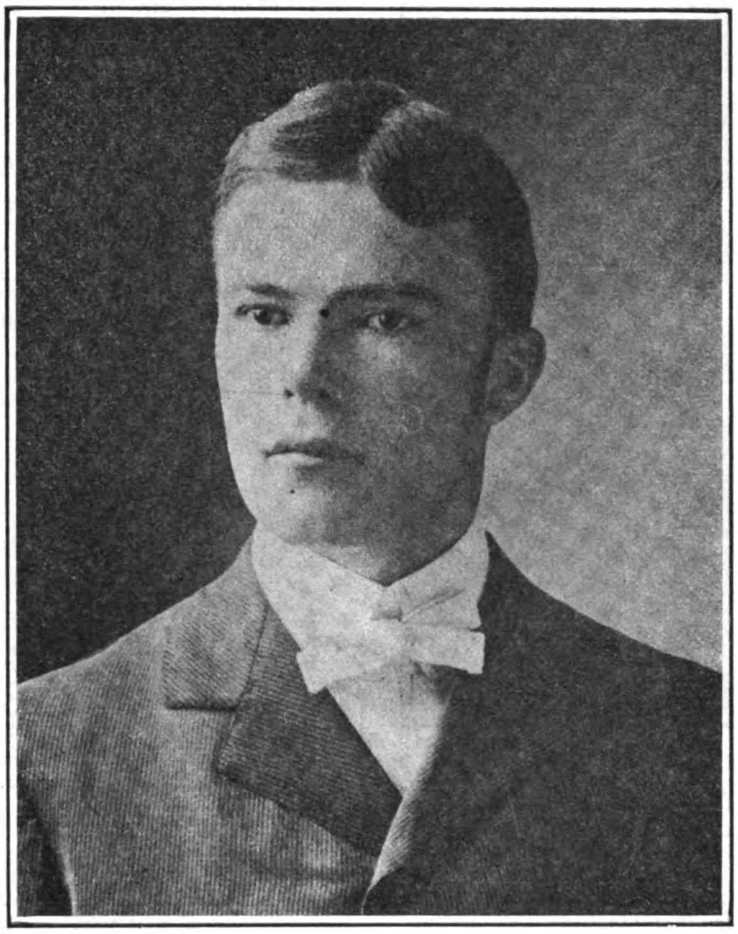
Mr. Claude Kinder, the Engineer-in-Chief of the Imperial Railways of North China, was in a fair way to be appointed Inspector General of China's Railways. Had he adopted a different policy, and admitted the right of the Chinese to a broad share in the management of the line, instead of standing on the hard and fast terms of a loan agreement, there is little doubt that this coveted post, out-rivalling in importance the Inspectorate General of Customs, would have been tendered him. Under his direction the railway standards of the Empire had been designed and adopted, and the way paved for the manufacture of cars and bridges for all Chinese roads, in the shops under his direction.

Mr. Kinder's services to British interests were on a par with, if they did not exceed those rendered by Sir Robert Hart.

AMERICAN FINANCIAL ADVISERS TO THE PERSIAN GOVERNMENT

The appointment of Mr. W. Morgan Shuster as Financial Adviser and Treasurer General to the Persian Government is the first time that an American official has been requested by a continental power to act in that capacity.

The badly tangled condition of Persian finances was the subject of much discussion by several interested European powers and it was practically decided that they would take them over under a joint European commission for the purpose of straightening them out This of course would have involved more or less friction, but it was finally decided that a corps of officials, comprised of the citizens of a country having no financial claims, would best serve the purpose and at the suggestion of the Persian Government, approved by the European bondholders, a request was made to President Taft by Persia for the services of a staff of officials to take charge.



HON. W. MORGAN SHUSTER
FINANCIAL ADVISER AND TREASURER GENERAL TO THE PERSIAN GOVERNMENT

BRUCE L. DICKEY
INSPECTOR OF PERSIA'S PROVINCIAL REVENUE DEPARTMENT

The position was at once offered Mr. W. Morgan Shuster to head this staff in the capacity of Treasurer General. President Taft was no doubt influenced in his selection by his personal knowledge of the man who had served his administration most loyally in the Philippine Islands and whose direction of the important position of the Philippine Bureau of Customs won for him advancement to the portfolio of Secretary of Public Instruction.

Mr. Shuster's first public service was in connection with the Cuban customs service where he served three years and became special deputy collector. In 1901 he was appointed Collector of Customs, Philippine Islands, in which capacity he served for five years. In 1906 he was appointed Secretary of Public Instruction by President Roosevelt upon the recommendation of Secretary of War Taft. In 1909 he resigned from the government service to engage in the practice of law in Washington, D. C. During his official career, he was active in the revision and framing of

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The diplomat was knighted and honors heaped upon him, but the Engineer was retired to private life after a lifetime of service. British manufacturing interests owe a debt of gratitude to Claude Kinder, for his work in their behalf merits some substantial reward in honors.

Other manufacturing nations however have every cause to feel relieved over the failure of Mr. Kinder to secure the coveted post of Inspector General of Railways, for had this occurred it meant the complete standardization of all the lines in the Empire according to British specifications, and the gradual monopolization of the immense field by manufacturers of this nationality.

That this was the ultimate goal of British railway policy in China is revealed in an article from the pen of Mr. J. O. P. Bland, in *The Times* of London last year. Mr. Bland was defending the British Loan agreements in answer to the main editorial of THE FAR EASTERN REVIEW in its issue on Railways in China, and summed up the situation in the following words:—

"It is evident to-day, whatever doubts there may have been on the subject three years ago, that Chinese Government railways cannot be expected to strengthen and benefit the country unless, like the Customs, they are administered under honest and efficient (that is to say under foreign) financial supervision. Given this condition, and a certain inevitable amount of waste in construction need not be too closely regarded."

This statement emanating from one who represented British railway financial interests in China for several years discloses the desire to duplicate the conditions existing in the Customs. On analysis this statement says, in effect, that, like the Customs, as long as British railway loans predominate in China, the Inspector General of Railways must be a British subject.

The full significance and weight of this argument was not lost on the high Chinese officials and foreign diplomats, who immediately saw the danger to China and their respective commercial interests from this avowed trend of British policy.

It is to be regretted that foreign expert knowledge is spurned by China, when she stands so sadly in need of such disinterested advice, and it is to be hoped that she will yet find some way to avail herself of the services of broad minded competent foreigners who will subordinate their national interests to those of the Country they are called upon to serve.

FRANK S. CAIRNS,
DIRECTOR OF TAXATION FOR THE PERSIAN GOVERNMENT

revenue and tariff laws and his experience in the direction of internal finance makes him a most desirable man for the place.

In proceeding to the selection of his staff, Mr. Shuster chose men from among those closely associated with him in his official career and who are familiar with the work to be undertaken.

Frank S. Cairns of Maine, who will be Director of Taxation, served with Mr. Shuster in Cuba and the Philippines, occupying the posts of special agent, surveyor of the port, deputy collector, and when he received this appointment was serving as collector of customs of Iloilo, the second largest port in the Philippines.

C. I. McCaskey, who has accepted the position of Inspector of Provincial Revenue, is a son of Major General W. S. McCaskey, U. S. A., retired. He entered the Customs Service in Manila in 1899 as inspector and was promoted to the position of deputy surveyor in 1907, but owing to illness of his wife retired from the Philippine service and accepted the position of inspector of customs at the port of New York. In 1909 he was promoted to the position of acting deputy surveyor of New York, which position he gave up to accept his present commission.

Bruce L. Dickey, who will serve the Persian Government as Inspector of Taxation, was appointed inspector of customs at Manila in 1901. He was promoted through the various grades to the post of chief of the passenger and baggage division and later in 1906 was appointed cashier which position he held until 1909, when he resigned to return to the United States.

C. J. Hills, who goes to Persia in the capacity of Expert Accountant, is a native of Cleveland but has been resident in Washington since childhood. He is a graduate of the Columbian University, where he took a law course. He was employed by a bonding company of New York and later entered the office of the solicitor of the Department of Commerce and Labor to resign a year later to engage in private and departmental practice of law. He held the office of examiner of building and loan companies for the United States Treasury and his wide experience in the supervision of accounts makes him a most desirable addition to Mr. Shuster's Staff.

THE U. S. COMMERCIAL AGENT TO THE ORIENT

The recognition by Secretary Nagel of the U. S. Department of Commerce and Labor of the growing interest among American manufacturers in the development of Far Eastern trade, was emphasized recently by the appointment of Lovett M. Wood, editor of the *Seattle Trade Register*, to the position of Commercial Agent to the Orient, under the Bureau of Manufacturers. Mr. Wood has been a resident of Seattle for over 22 years and during that time has watched the growth of Seattle trade with the Orient and familiarized himself with conditions, so that he is sufficiently informed as to the attitude of Western manufacturers toward Oriental trade development, to make his active interest in his present position very valuable. Before leaving for the Far East in March Mr. Wood made it a point to meet the representative commercial bodies of the Pacific Coast interested in promoting better trade relations and was assured of their active interest and support in his work.

YELLOW JOURNALISM A MENACE

The glaring sensationalism of the yellow press that devotes its space to the magnification of crime by lurid details, so nauseating to the healthy section of any community, is receiving some attention from commercial quarters that may serve to check its evil influence. Mr. Edward A. Abbott in the Southern Furniture Journal calls attention to a recent pessimistic attitude on the part of the trade press in which they invariably charge that "Unreasoning fear and unwarranted apprehension is what ails business," but Mr. Abbott declares it is largely due to the distressing influence of the Yellow Press upon the minds of the people.

He relates in illustration of how the yellow terror is spreading mental depression by the story of an old negro woman whose efficiency was reduced by the distressed condition of mind following the reading of details of an unhappy crime.

He writes:

"The woman is several times a grandmother and has been in my employ fifteen years. She can read, write and count, and is faithful and efficient in her humble place. One day when she was counting some dishes for me, I noticed her usual accuracy was lacking. On being asked the cause, she said, 'Mr. Abbott, I'm all broken up.' Then, with tears wetting her wrinkled face, she told me she had read in the morning paper about a 'white man up in Illinois' who, whisky crazed, had stamped his little baby to death.

"If so humble a worker is, by this cruel publication, so distressed that she cannot count cups and saucers and plates, what must be its effect on her employer, higher up in the scale of intelligence and responsibility"

He continues:

"If we read our morning paper, we go to our stores and factories with minds shocked by the doings of criminals, soiled by the vulgarities of the divorce courts and filled with fear and apprehension by double-headed stories of defaulting cashiers, unfaithful employees and no end of other commercial iniquities. At night we are disturbed by the terrors of the day that we have read about in the evening paper, that follows us to our homes with stories even more yellow and more shocking than those that went out with us in the morning."

For a solution he offers:

"Without hope of help from those in high places, in church and society, I propose to take the case to the advertiser who, in buying space, is paying the press to hinder his business and delay the return of those good times we are all looking for.

"I shall ask the trade journals of the whole country to furnish the publicity and help to convince the storekeepers and manufacturers that murder and suicide, larceny and divorce, disease and death are not good companions for their advertisements Together we will show those who have things to sell the wisdom of cultivating a clientage that is optimistic, joyous and clean minded—not one that is fearful, saddened and vulgar.

"We shall ask the advertisers to put the knife in the Yellows' and Muck-rakers' most vulnerable spot—the cash register. We shall not ask in vain. This is my prescription for the 'unreasoning fear and unwarranted apprehension' that is hurting business."

Mr. Abbott might have gone further and directed attention to the crowning crime of this same yellow press that, not satisfied with filling the local mind with the horrors of which he writes, spreads it misinformation and sensational interpretation of international questions in a manner to inflame the lay mind, stir up race prejudice, and make trouble between neighboring nations. Of such we have had a surfeit. We not only endorse Mr. Abbott's campaign but would go further and urge a ban upon the literature that is jeopardizing foreign relations, and injuring foreign trade. The publication that would viciously inflame the citizens of one nation against those of another, is a serious menace to any country and patriotic advertisers everywhere should find it their duty to serve this class of Yellow Journal with the same rigorous discipline as they would mete out to the local member of the same lurid press. And the counting room is a very vulnerable objective.

IMPERIAL KIRIN-CHANGCHUN RAILWAY

The Kirin-Changchun Railway, which, when completed, will traverse one of the most prosperous sections of Manchuria, is approximately 85 miles in length according to survey and last month 35 miles were opened to construction train traffic connecting Changchun with Yingchengtsu, while construction is well along on the Kirin end.

In December last year the announcement was made that the line would be opened for passenger and freight traffic from Changchun to Coran by construction trains a distance of about 15 miles. The inauguration of the section was celebrated at Changchun on December 5, 1910, by a general reception. The local authorities, gentry, and Japanese and Russian officials, with a number of foreign prominent merchants in Southern Manchuria were invited to be present. Tea and refreshments were served by the staff of the Railway. Addresses were given by the Director-General and the Engineer-in-Chief.

The Director-General said:—"Gentlemen—I am very glad to express my pleasure in having you with us today to witness the opening ceremony of running trains of the Kirin Changchun Railway in spite of it being such an extremely cold day. I also wish to express my sincere gratitude to you for your favors often shown me since I was appointed by the Board of Communications in the 10th Moon (December 1909) of last year to take over the directorship of this administration.

"Now let me submit you a brief report on our work here. During the 11th Moon (January 1910) of last year, our Engineer-in-Chief and I made a careful survey for this line when there was tremendously heavy snow about several feet deep, which caused a great deal of trouble to our work. But in the following month we got our staff to continue the measurement in spite of the hindrance of snow and ice on our way. But the 4th Moon (May 1910) of this year as soon as the snow and ice were melting away we began to have the embankment built without delay. But owing to the continuous rains in the last three months (viz. the 6th, 7th, and 8th Moon of this year) the work was greatly interrupted. Fortunately through the efforts and diligence of every member of the whole staff, the section of the embankment from Changchun to Tumenling, about 140 li long (44 miles), has just been completed. As to the other section of the embankment about 120 li (40 miles) long from Kirin, the work has been also nearly done. As all the materials have already been o tained, we are hoping that by the first two months of next year the rails will be laid as far as to Tumenling through Yihmah-ho, but at present, only a short section of 50 li (16 miles) between here and Kalunkah has been completed. So that by the first day of next Moon (January 1911) the construction trains will begin to run and at the same time we hope we will be able to provide accommodation for the passengers and to carry cargoes in the same trains.

"I am sorry that you are greatly disappointed today by coming over here to see such incomplete work as the stations. Cars and other facilities have not yet been put into good working order.

"On behalf of the staff of the railway, I, as a Director-General wish to drink your health and thank you heartily for your kindness in being present." The Engineer-in-Chief (a Japanese gentleman) said:—

"*I—The result of general work.*

"I have nothing to say except a short report on the work which has been trusted in my charge. The distance of the main line from here Kalunkah is 13 miles and from Toutaoleo, 15 miles. The highest part of the embankment is 26 feet and the deepest part of the trenches is 16 feet. As to the construction of the turn-outs, switches, etc., all is built satisfactorily. Now I wish to tell you that the importance of the construction is to have the road built as soon as possible for the convenience of conveying the materials for the building purpose, then the work will be easily carried on with more success. At the present time, the stations and other buildings have not yet been put up in good shape as you have already witnessed.

"*II—The diligence of the Director-General.*

"On the 2nd day of the 12th Moon of last year when the weather was much colder than it is now, the Director although he was then very ill, went with me to survey the line of this road in spite of the heavy snow on the way. Now I am sure the success of the contruction is insured by his hard work which I believe is appreciated by you all.

"*III—The faithfulness of the staff*

"As the Director-General has been so diligent all the time, the whole staff are also willing to work hard. Now I am very glad to say that the result of having the whole line of embankment built up, and the construction trains begun to run as far as Kalunkah is due to both the diligence of the Director-General and the faithfulness of the whole staff.

"*IV—Chinese and foreign interests.*

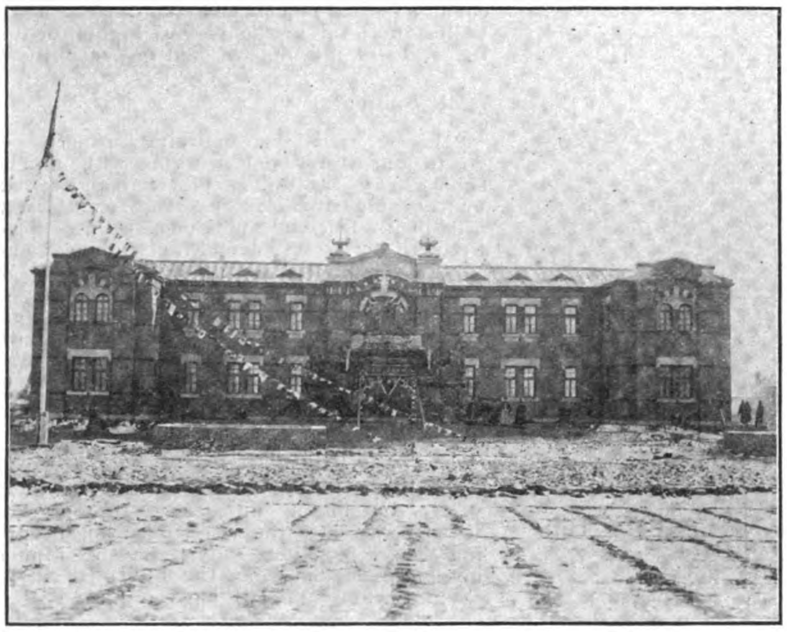
"I also wish to say that the success of this undertaking is not only dependent upon the hard work of the staff but also of the help of well-wishers of different foreign countries. With this in view I wish to thank you for your kindness before the large audience of our guests.

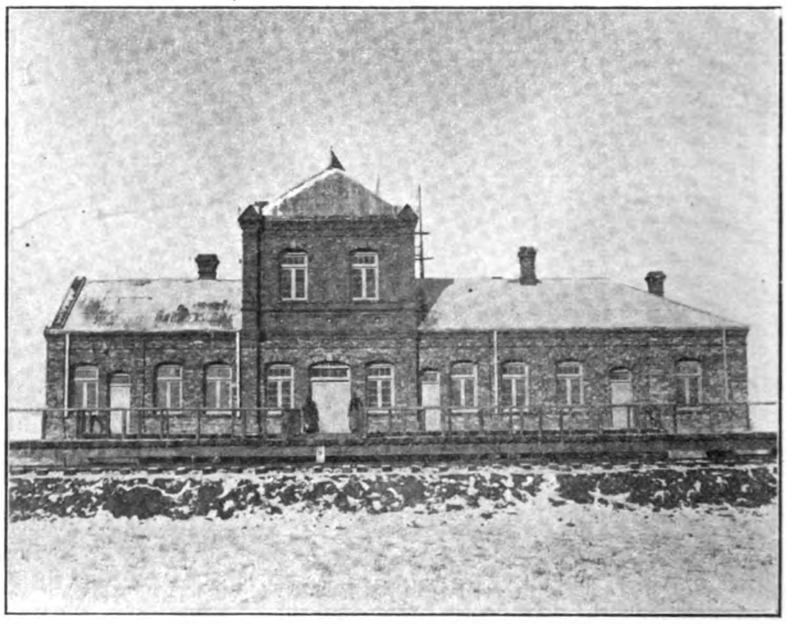
"*V—Good feeling from the Southern Manchurian Railway Society.*

"I also wish to thank the Southern Manchurian Railway Society for its sincere sympathy with our work.

"*VI—The future hope.*

"I hope that we will do our utmost in bringing about the completion of this railway as soon as possible and that you will continue to do us favours as you have ever done before."





IMPERIAL KIRIN-CHNGCHUN RAILWAY

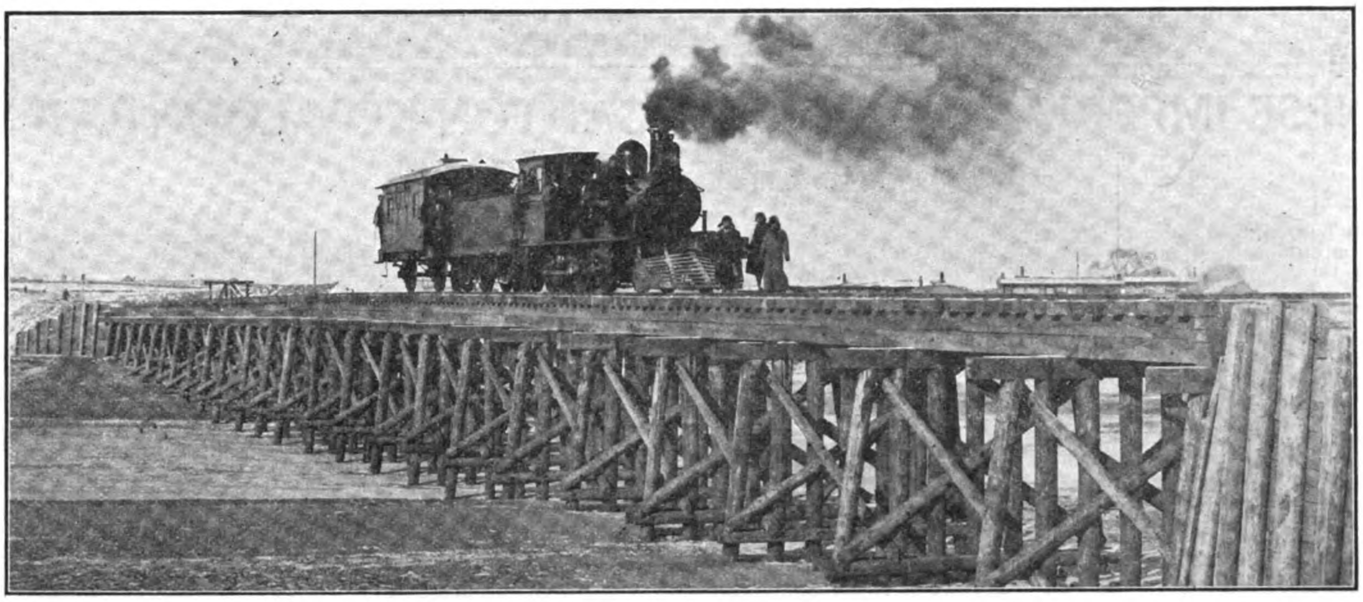
ADMINISTRATION BUILDING AND STATION AT CHANGCHUN A FIRST CLASS STATION

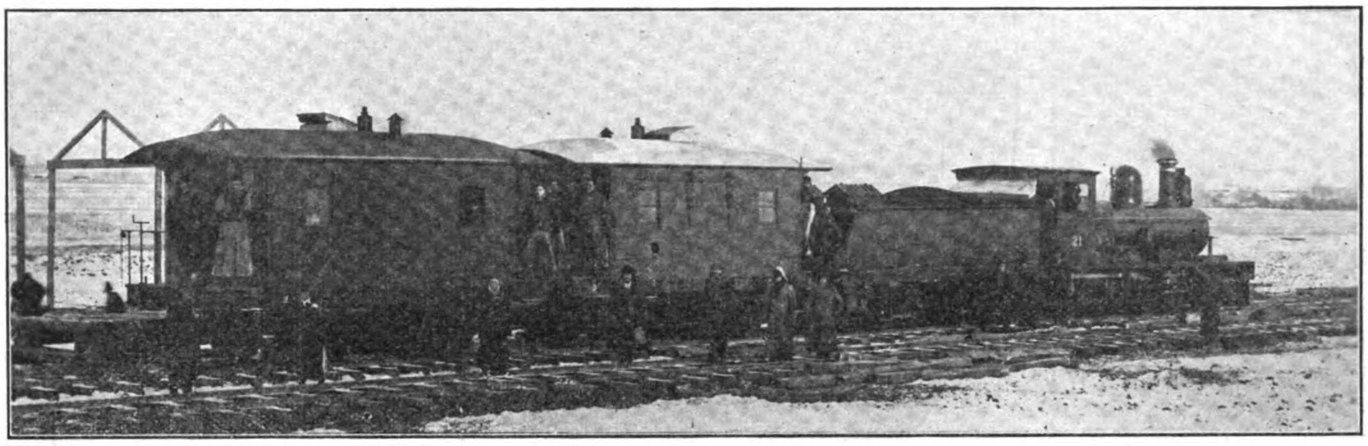
The first locomotive put in commission on this line was built in the shops of the Imperial Railways of North China. The Hanyang Iron Works have the contract for supplying all the rails. The most difficult engineering work on the line has reference to two large bridges and one tunnel, upon which work is progressing most favorably. Indeed, great activity has featured this railway construction throughout there being no suspension of work during the winter months. The bridges will all be of steel or reinforced concrete with the exception of temporary structures where large permanent bridges are being built so as to expedite the opening of general traffic.

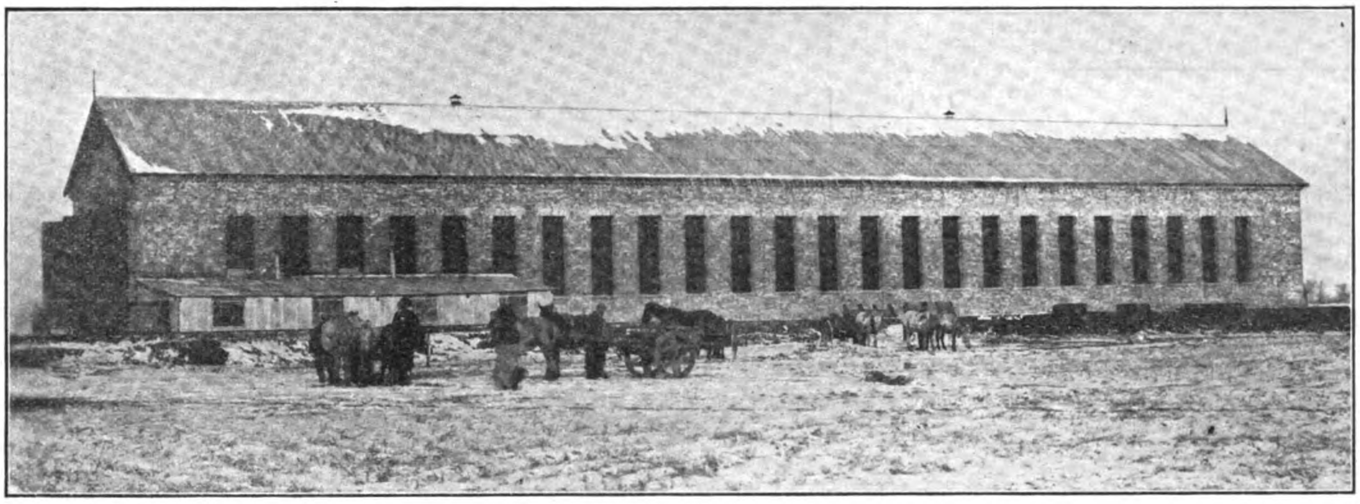
It is expected that the line will be completed by November this year.

The Kirin Changchun Railway is financed by Japanese and Chinese capital. Under an agreement entered into between the South Manchuria Railway and the Chinese authorities the former agreed in August, 1909, to loan the latter half the capital necessary to construct the line. The total capital required was estimated at Tls 4,300,000 of which half was paid over to the Kirin-Changchun Company in September, 1909. The Yokohama Specie Bank was named repository for the funds of the railway. The loan bears interest at the rate of 5%.

The agreement provided that the Engineer-in-chief and the Chief Accountant should be Japanese, that the agreement should continue in force for 25 years and the railway be operated by Chinese and Japanese jointly.







VIEWS OF THE KIRIN-CHANGCHUN RAILWAY

TEMPORARY WOODEN TRESTLE AT CHANGCHUN. CONSTRUCTION TRAIN. LOCOMOTIVE SHED AT CHANGCHUN. STOREHOUSES AT CHANGCHUN

The locomotives and cars for this line were built at the Tangshan Shops of the Imperial Railways of North China

CHINESE IMPERIAL RAILWAYS.--CANTON-KOWLOON RAILWAY

THE CHINESE SECTION

We are now enabled, through the courtesy of the Administration of the above Railway, to present to our readers a detailed account with illustrations of this, one of the last railways, to join the revenue earning lines of China.

A section of 29 miles was opened to public traffic on December 6th, 1910, and the photographs show the ceremonial train and party of Chinese and foreigners which proceeded to Tong Mei (Mile 24) from Canton on December 5th, the occasion being the formal opening of this section by His Excellency The Viceroy of the Kwang Tung provinces.

The total length of the Chinese Section of the Canton-Kowloon Railway is 89¼ miles; the Loan Agreement for its construction was signed in March 1907 by the British & Chinese Corporation and the Imperial Chinese Authorities; the detailed survey was commenced in August of that year, while construction was commenced in certain sections where land had been purchased, in June of 1908.

The local administration of the railway is placed by the Loan Agreement in the hands of a Chinese Managing Director associated with a British Engineer-in-Chief and a Chief Accountant, and these positions are at the present time filled by Mr. Chao Ching Hua, Acting Managing Director, Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief, and Mr. Ernest Hall, Chief Accountant.

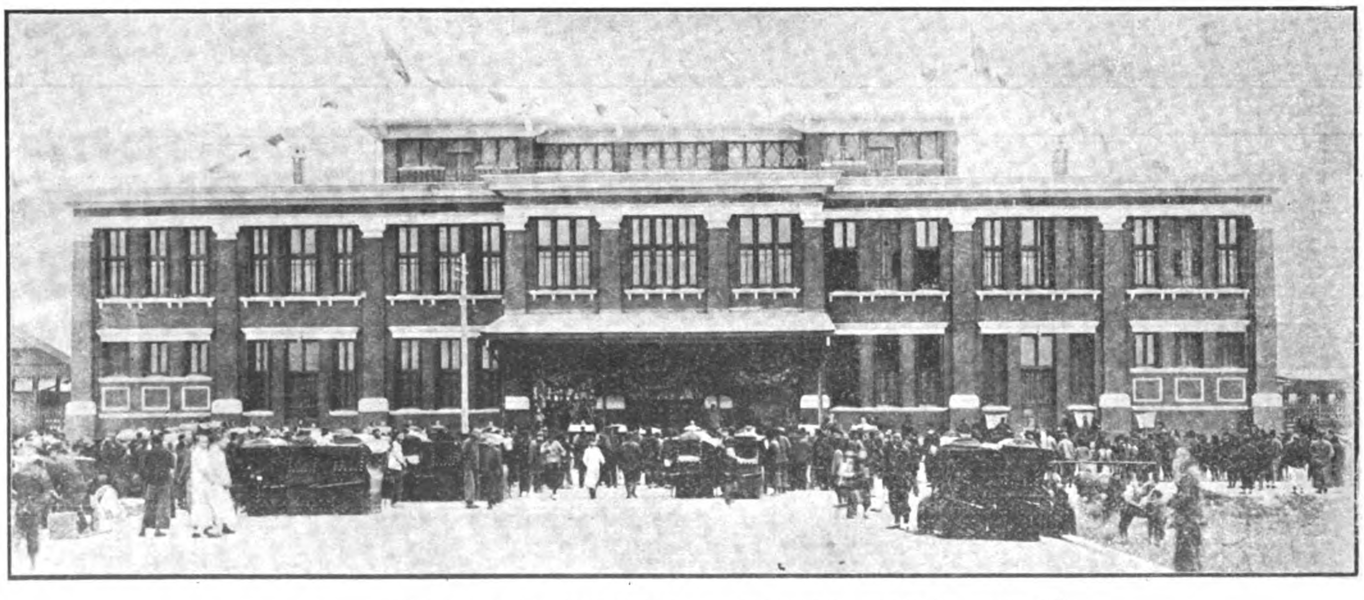
The executive officers at present engaged on the line are as follows: Mr. B. T. B. Boothby, Assoc. M. Inst. C. E., District Engineer, No. 2 District; Mr. W. G. Moore, District Engineer, No. 3 District; Mr. W. M. Stratton, Maintenance Engineer, Tai Sha Tou; Mr. J. J. Thompson, Locomotive Superintendent, and Mr. C. T. Liu, Traffic Manager.

Construction work has proceeded steadily, though many troubles caused by native opposition in the country districts occurred in the early days of land purchase and of the commencement of actual works. Eventually, however, with more vigorous measures on the part of the Chinese authorities, and much patience and care on the part of the foreign engineers, a better time came and more rapid progress was attained, especially in the past year.

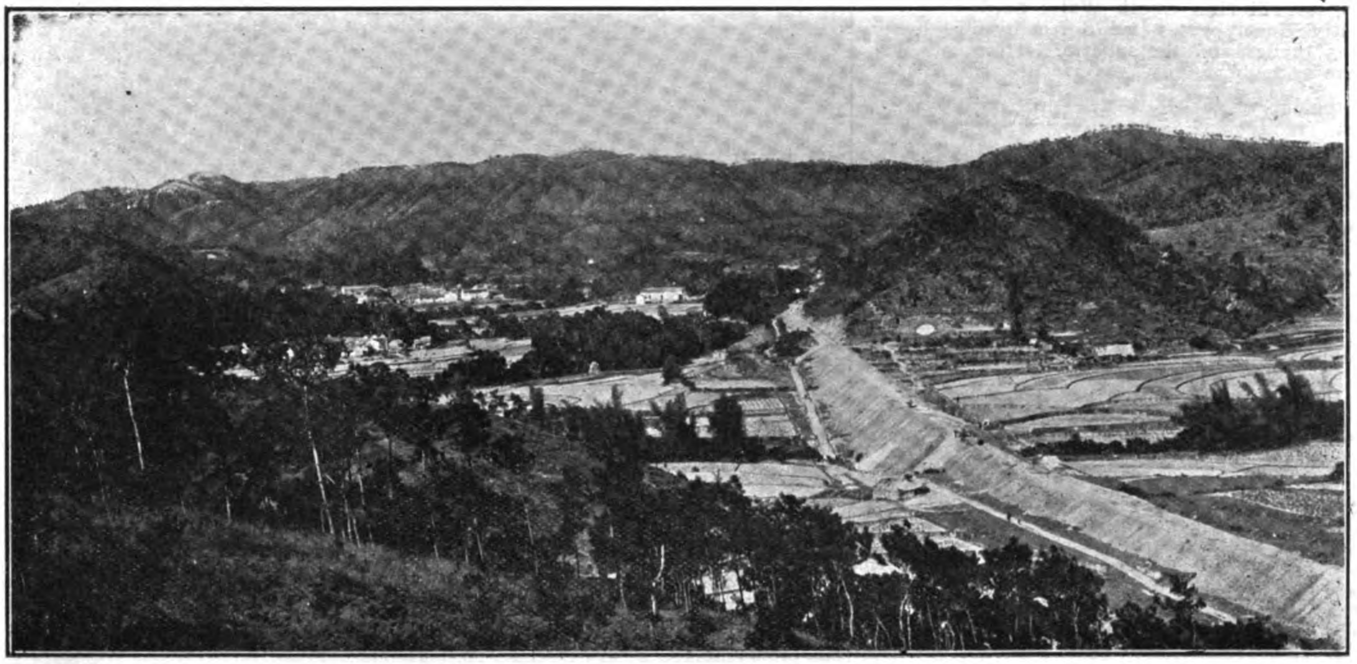
C. T. LIU,
TRAFFIC MANAGER

FRANK GROVE, M. I. C. E.
ENGINEER-IN-CHIEF

TAOTAI CHAO CHING-HUA
ACTING MANAGING DIRECTOR



CANTON-KOWLOON RAILWAY.—TAI SHA TOU (CANTON) STATION



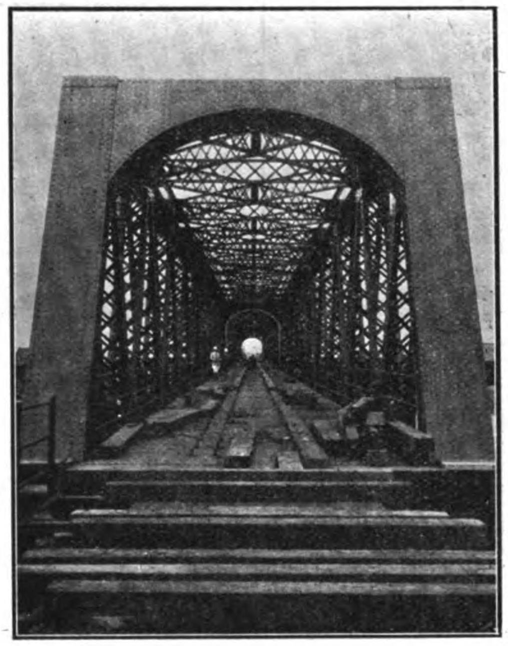
MILE 83, LOOKING NORTH, CANTON-KOWLOON RAILWAY.

While this Railway does not rank as China's most difficult engineering work up to the present, there are works of magnitude and some considerable engineering interest.

In the early days of promotion of the scheme, a length of 100 miles, more or less, was anticipated and that this could be reduced to 89½ miles is satisfactory. Tunnels have been avoided though there are heavy earthworks from Mile 58 to Mile 85 through hilly and mountainous country, and in the lowlying portions there are some 10 miles of high embankment necessitated by the very high flood levels.

Besides an interesting route through the hilly portions, already indicated, the feature of this railway which calls for special comment is a series of large bridges in the East River Valley which is crossed between Mile 32 and Mile 41. In these nine miles, the following bridges have already been, or will very shortly be, completed, and we are enabled to give photographs of some of these interesting works.

Sien Tsun River Bridge	5 spans 60 feet Skew.
Shek Ha do.	3 spans 60 feet.
Shek Tan do.	3 spans 100 feet, 2, 60 feet.
Pek Kong do.	4 spans 60 feet.
Kan Sui do.	3 spans 100 feet.
Sheklung, East do.	3 spans 224 feet, 2, 60 feet.
Tung Kun do.	4 spans 224 feet, 2, 60 feet.



VIEW THROUGH THE GIRDERS OF THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RY.

The method adopted for the erection of the 224 feet span girders is unusual in this part of the world and indeed has been elsewhere seldom attempted on so large a scale. Five spans have already been floated out at bed stone level on pontoons specially built with deck staging for the purpose. The weight of each span when floated out is 330 tons and the erection and riveting has taken place on shore near launching jetties. The final floating out and seating of each span only occupies a few hours. The piers of the larger bridges are founded upon caissons encased as to the lower portion in steel, sunk to a sufficient depth by open dredging and finally plugged with concrete.

The ruling grade of the line is 1 in 150 and this grade is almost entirely confined to the hill section, which remark also applies to the sharpest curvature, viz: 3 degrees.

Tangents are long throughout the more level portions of line and therefore a satisfactory through train speed should be maintained without difficulty.

Steel Rails '85 lbs per yard have been supplied by the Hanyang Iron & Steel Works, Hanyang, near Hankow, also fastenings with the exception of fish bolts, and the quality, as proved by analysis and physical tests, is up to a high standard.

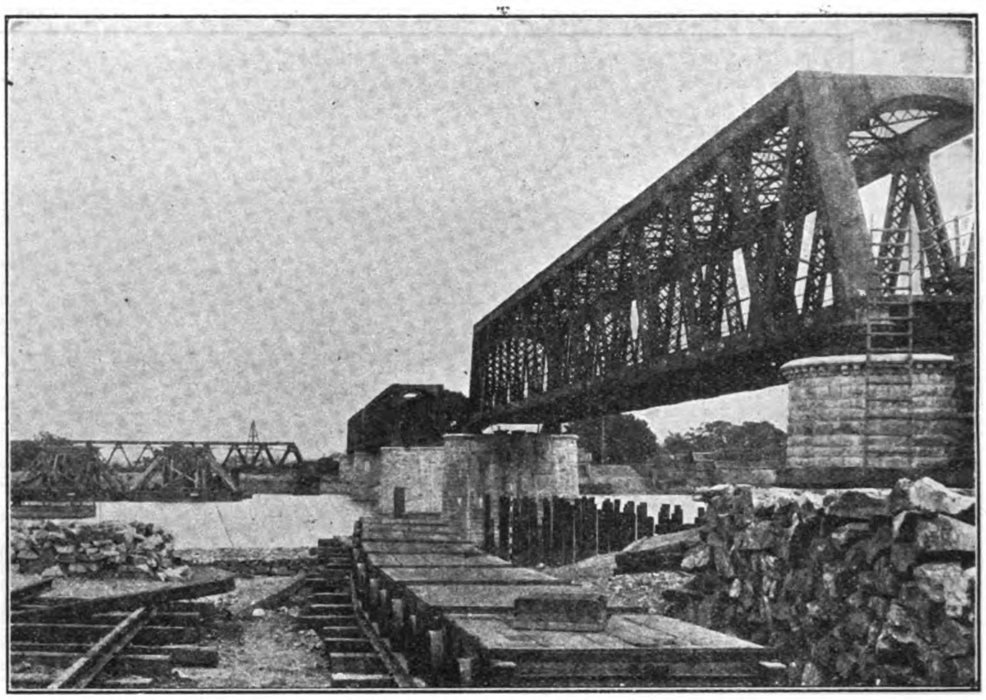
THE OPENING TRAIN AT TAI SHA TOU STATION (CANTON) ON THE CHINESE SECTION

Sleepers are of New South Wales hardwoods mostly Eucalyptus, hewn, 8 feet by 9 inches by 5 inches, and the superior lasting qualities are undoubted.

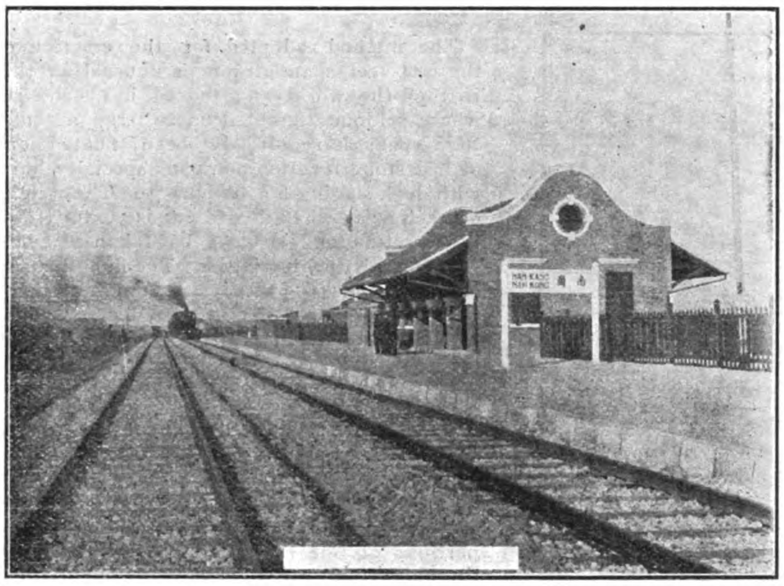
The equipment of the Railway, while not extravagant, is such as will ensure a fair degree of comfort to passengers, and the railway has already been complimented on the smooth running of its trains.

The type of locomotive at present adopted is 2-6-0, outside cylinders 19"×24" stroke, double bogie tender for 3500 gallons of water and 5½ tons of coal, weight of engine and tender loaded 101½ tons, maximum axle load 16½ tons, diameter of driving wheels 5 feet, manufacturers, the North British Locomotive Company Limited, Glasgow.

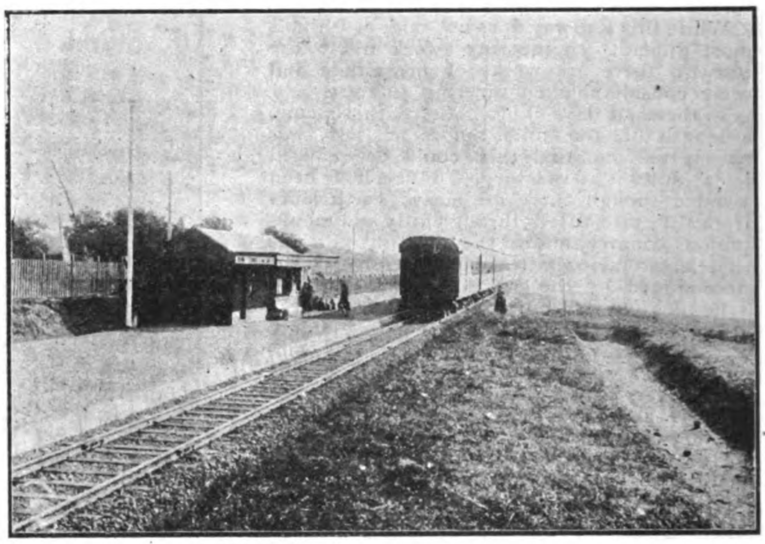
Eight carriages at present in use were supplied as to frames and bogies by the Metropolitan Carriage & Wagon Company, Birmingham, the bodies being manufactured and erected by the Hongkong & Whampoa Dock Co., Ltd., of Hongkong who sent up the carriages to Canton ready for running by lighter towed by a launch. Twenty-three similar carriages are under contract with the Tong Shan Works of the Imperial Railways of North China. The type of carriage adopted is as follows:—length over platforms 61 feet, 4 wheel bogies, body of teak with varnished teak lagging outside and light wood inside, high dome roof with torpedo ventilators. The trains are continuous with standard central couplers and Westinghouse Brake throughout. The first class carriages have a side corridor with coupés and a card saloon, rattan seats and cushions and electric light equipment. For sound design and workmanship combined with reasonable economy, the type of carriages adopted, which has also been introduced on the British Section of the railway, is considered eminently satisfactory.



THE TUNG KUN RIVER BRIDGE, CANTON-KOWLOON RAILWAY.



CANTON-KOWLOON RAILWAY.—NAM KONG, 3RD CLASS STATION

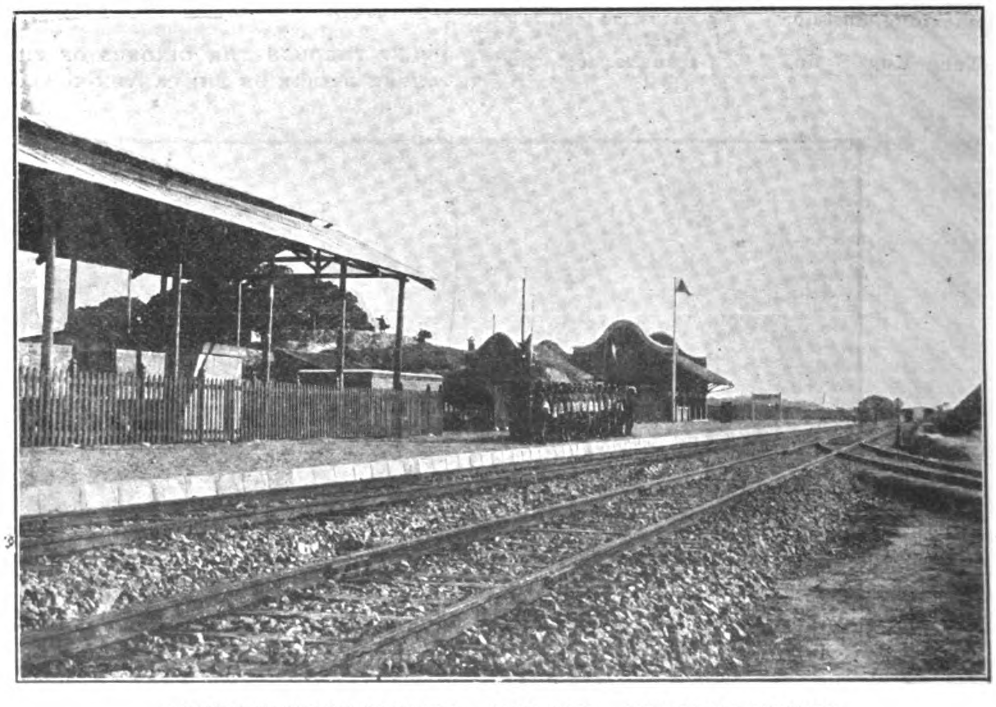


SUN TONG HALT ON THE CANTON-KOWLOON RAILWAY.

The terminal station at Tai Sha Tou, Canton, as the illustration indicates, is now completed and in use as a general head office, as well as providing station accommodation.

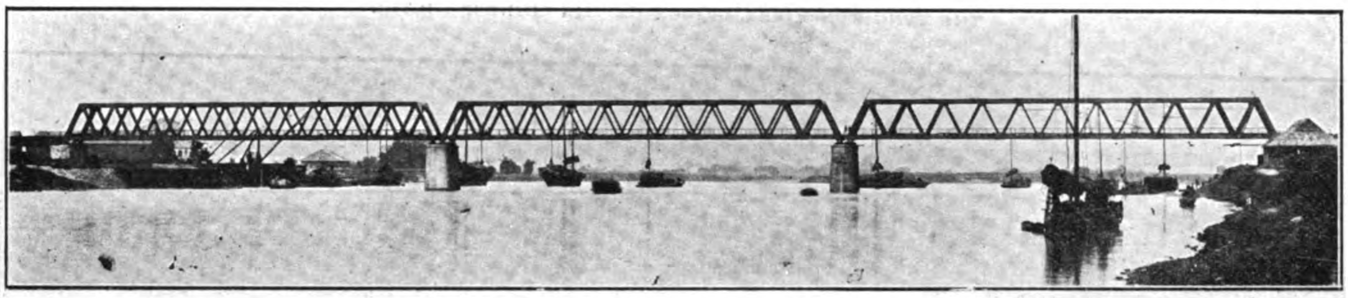
The smaller stations on the line are simple structures sufficient to serve local demands, while permitting extension and development with the growth of traffic.

With the exception of Sheklung on the East River, which is a dstributing center of some considerable importance, though not a large city, there are no towns of importance contiguous to the railway. There are however many villages and a large population, and the rapid and cheap means of transport afforded by the open section of the line is already hailed with much gratification by the inhabitants.



CANTON-KOWLOON RAILWAY.—SIEN TSUN, 3RD CLASS STATION

THE EAST RIVER BRIDGE: LAUNCHING A 224-FOOT SPAN, CANTON-KOWLOON RAILWAY



THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RAILWAY

In order, therefore, to develop a maximum amount of local traffic, besides 3rd class stations, semi-permanent "halts" have been established at all likely places, which, with a small station staff, should materially assist in building up the traffic of the railway.

The date of opening to through traffic with Hongkong is given as probably some time in August of this year and unless some untoward incident occurs, there appears every indication that this estimate is not over optimistic, for little remains to be done but completion of track laying, ballasting and some station buildings and yards, also the delivery and erection of further rolling stock to meet the needs of traffic.

We are informed that the existing section of open line will be extended to Sheklung (Mile 40) during April or May.

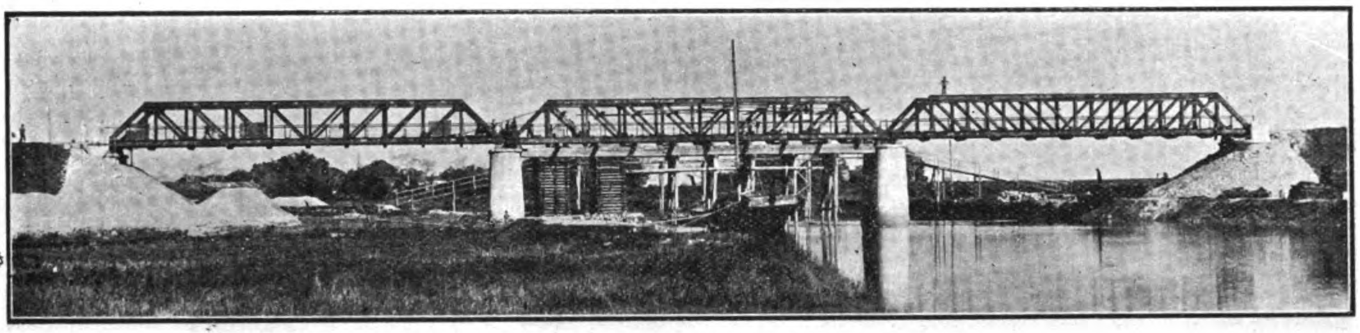
Upon the completion of the railway the travelling public will find an interesting journey awaiting them, the British and Chinese Sections combined, affording unusual and very beautiful scenic attractions apart from any engineering interest.

It is no exaggeration to state that the short railway journey from Hongkong to Canton will rank very high in point of interest, and the development of the line into one of the most important and financially successful railways is merely a question of time.

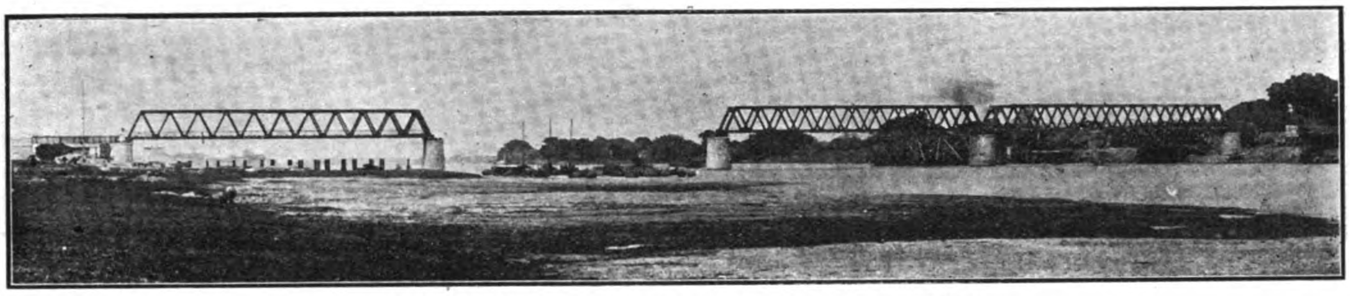
Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief of the Chinese section of the Canton-Kowloon Railway, deserves great credit for the progress made in the construction of this important line. Notwithstanding the many discouragements endured and prejudices to overcome, together with engineering difficulties encountered, Mr. Grove has upheld the prestige of British engineering construction standards in the enterprise now nearing completion. He was not discouraged by the many trying delays due to friction between the officials and the Chinese in their endeavor to fulfil their obligations to the railway, and the inhabitants along the right of way. By the exercise of great patience and tact, he carried on the work under these trying conditions and today it might be said that instead of the railway being unpopular, it appeals generally to the inhabitants who formerly lost no opportunity to obstruct the work.

Mr. Grove was formerly connected with the Bengal-Assam Railway previous to undertaking the position he has for years occupied. Indeed the Hongkong-Canton line is indebted to the Assam-Bengal for Mr. E. S. Lindsay, M. I. C. E., the Chief Resident Engineer, and Mr. H. H. Logan, assistant engineer of the

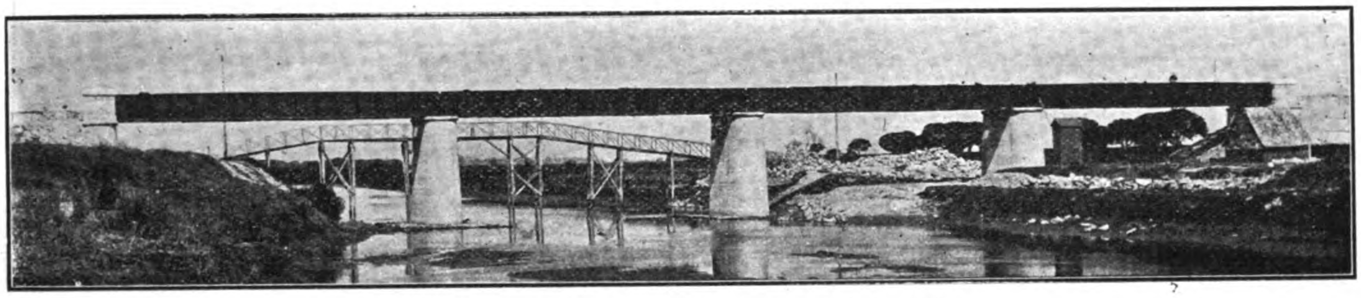
THE SHEK TAN RIVER BRIDGE



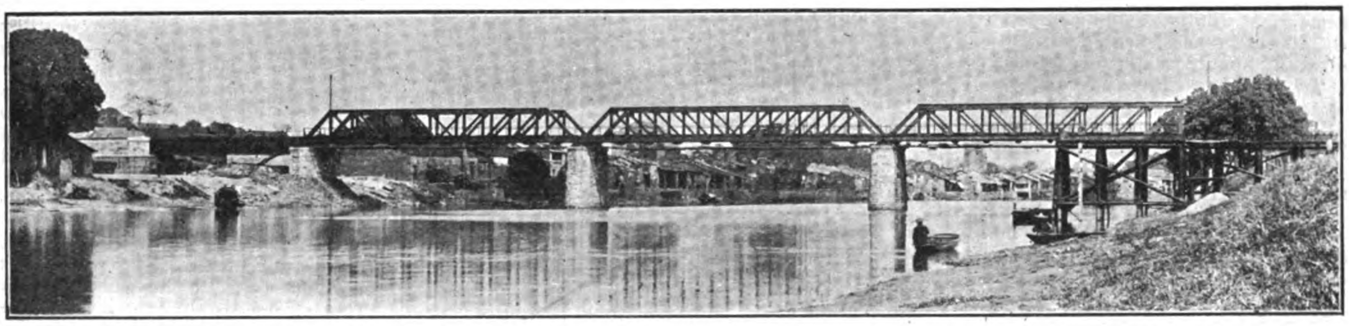
THE KAN SUI RIVER BRIDGE ON THE CHINESE SECTION



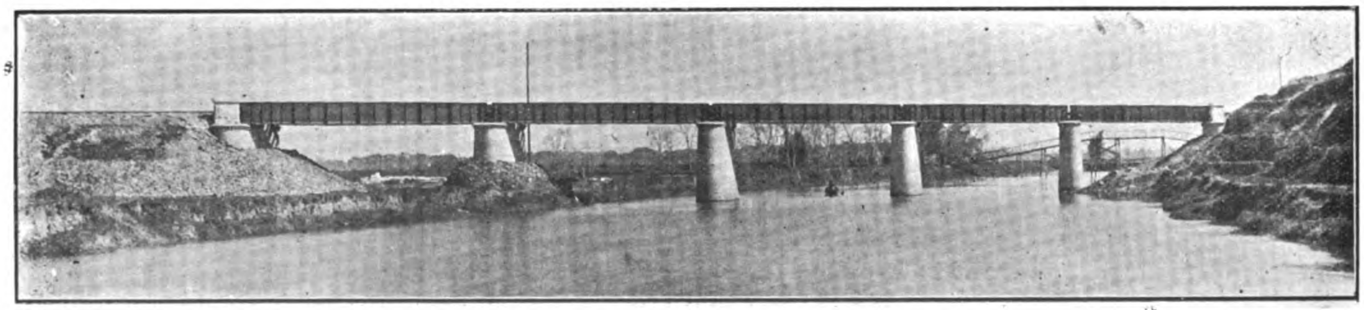
THE TUNG KUN RIVER BRIDGE ON THE CHINESE SECTION



THE PE KONG RIVER BRIDGE ON THE CHINESE SECTION



THE SHEK TAN RIVER BRIDGE ON THE CHINESE SECTION

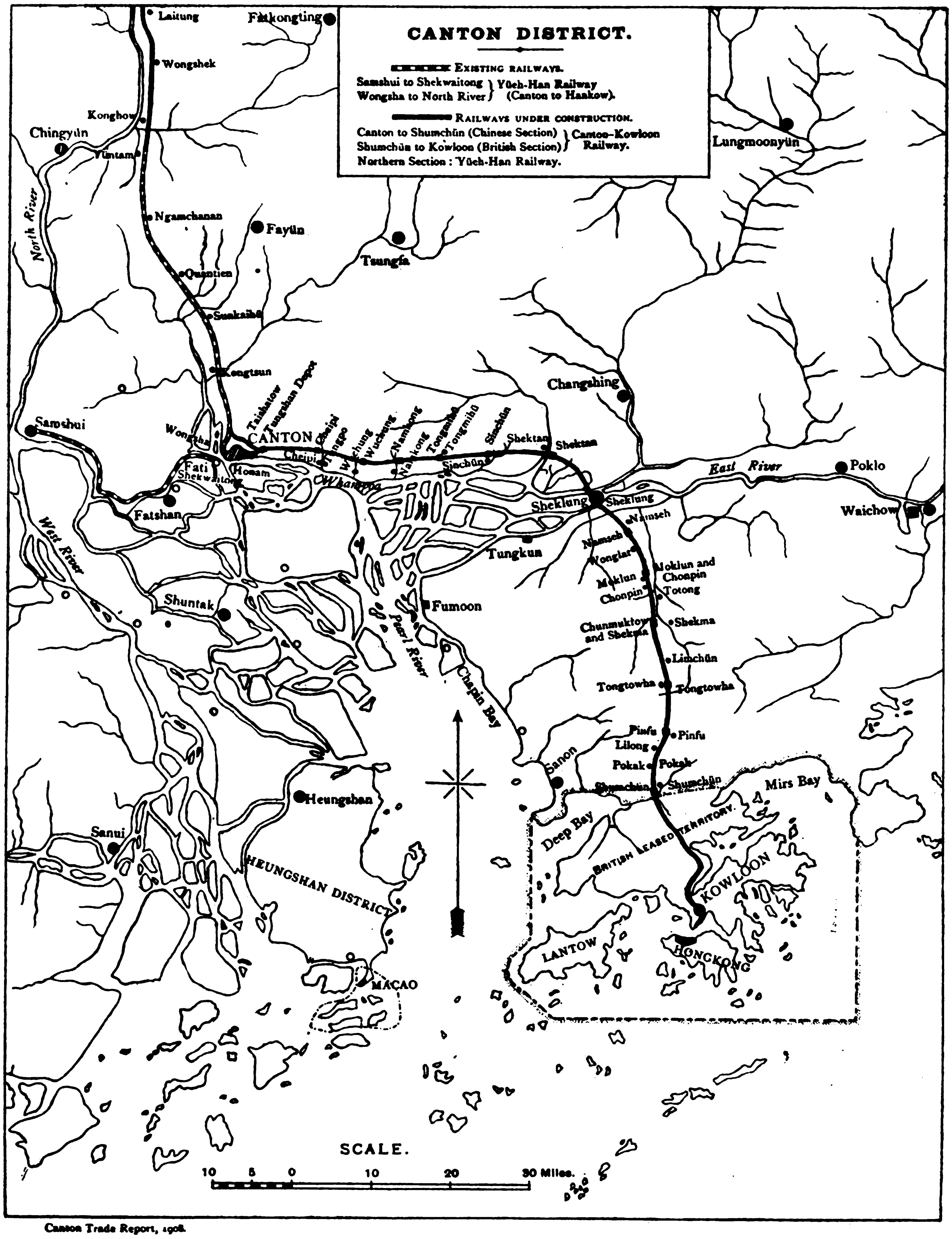


THE SIEN TSUN RIVER BRIDGE ON THE CHINESE SECTION

British section, who also served on this railway previous to their acceptance of these positions.

On the date of the opening of the first section Mr. Grove said:—"While delay is to be regretted, it should not be lost sight of that the rapid acquisition of large areas of land in the Kwangtung province presents a difficult task to Chinese officials which is not easily surmounted owing to the customs of China and the care necessary to avoid serious disturbances, especially in dealing with the removal of graves, tombs and temples.

With the exception of some comparatively trivial affairs it is at least a matter for congratulation that land purchase has proceeded to the extent indicated without great friction between officials and inhabitants, known in many districts for exceptionally truculent and determined habits, and that the safety of foreign engineers who have endeavoured to do their duties under trying conditions, has not caused greater anxiety than that experienced."



Canton Trade Report, 1908.

MAP OF THE CANTON DISTRICT SHOWING CANTON-KOWLOON RAILWAY LINE

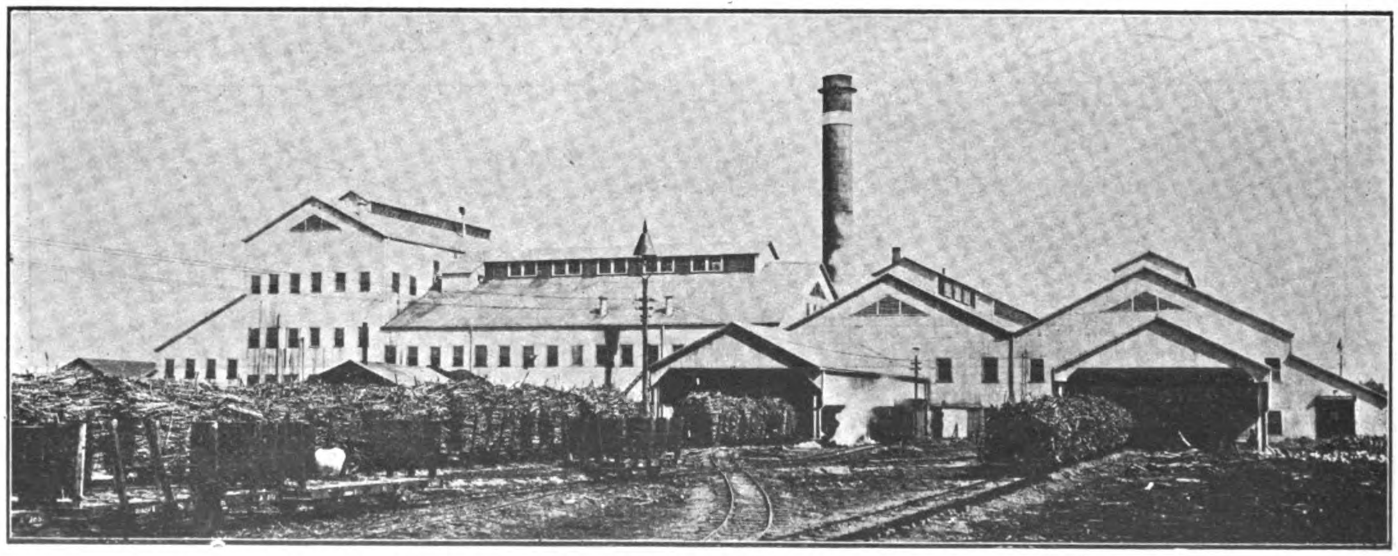
THE FORMOSAN SUGAR INDUSTRY*

Sugar did not originally exist in Japan, but was brought over as tribute about 1,140 years ago from China. Since that time records regarding the commodity are lacking, and trace of it is lost for a number of years; but about 330 years ago, when trade relations were opened with the neighbouring countries, we find sugar figuring among the imported goods. It was also during this period that the sugar cane was first introduced into Japan, and it has been proved by history that the cane was first planted in the Luchu islands. It is recorded that at this time some inhabitants of the island of Oshima who were cast on to the coast of China managed to learn the method of manufacturing sugar and introduced it into Japan on their return. The process of manufacture appears to have been of the most rudimentary nature, sugar being only used for medical purposes and as a luxury by the nobility and wealthy people. Sugar was gradually imported in larger quantities as the demand for it increased. It was about 180 years ago that Yoshimune, eighth of the Tokugawa Shoguns, encouraged the plantation of sugar cane and the manufacture of sugar by distributing the sugar cane plants from the Luchu islands to the different clans. He saw the disadvantage to Japan of being obliged to depend on foreign supply, and specially interested himself in the manufacture of sugar. Among the different *Daimyos*, Matsudaira Yoriyasu, Prince of the Takamatsu clan, manifested the greatest interest in the subject. The province of Sanuki, of which he was the feudal lord, often suffered from famine on account of the lack of irrigation, so he encouraged the plantation of sugar cane in his dominion with the object of raising the revenue, in order to cover the deficit frequently caused by a bad harvest. He ordered his retainers Hiraga Gennai and Ikeda Genbun to study the process of sugar manufacture, and one of the followers of the latter—Mukoyama Shukei—was able to attain the object and succeeded in manufacturing sugar of a superior quality. This was about 120 years ago, and since then the manufacture of sugar has become the staple industry of Sanuki province, Kagawa Prefecture, the name of "Sanuki Sambon" or Sanuki pure white sugar having become quite famous throughout Japan. About 90 years ago, when the finances of the Takamatsu clan were in a very embarrassed condition, the revenue derived from the sugar industry saved the situation, and the industry was further developed in the district. With regard to the other clans, the result was far from satisfactory. The development of the industry was, in most cases, either retarded or utterly neglected, the reasons for such a state of affairs being multitudinous. Some of the districts were entirely unfit for the cultivation of sugar cane; in others either the area of the sugar cane plantation was restricted, or the process of manufacture kept a strict secret. Some of the clans went so far as to prohibit the cultivation of the plant, deeming sugar an injurious luxury. Even the Central Government of the Shogunate, which had been scared by several cases of famine, laid great importance upon cereals, and forbade the cultivation of anything but cereals on the farms. It was considered that the sugar cane extracted richness from the soil, and orders were issued restricting sugar cane plantations to the waste land bordering the river beds. Some of the authorities even held the opinion that the development of the sugar industry in Japan would prove detrimental to the foreign commerce with the Dutch. So great was the prejudice and opposition that the only localities where the sugar industry remained were in Luchu Islands, Oshima and Sanuki.

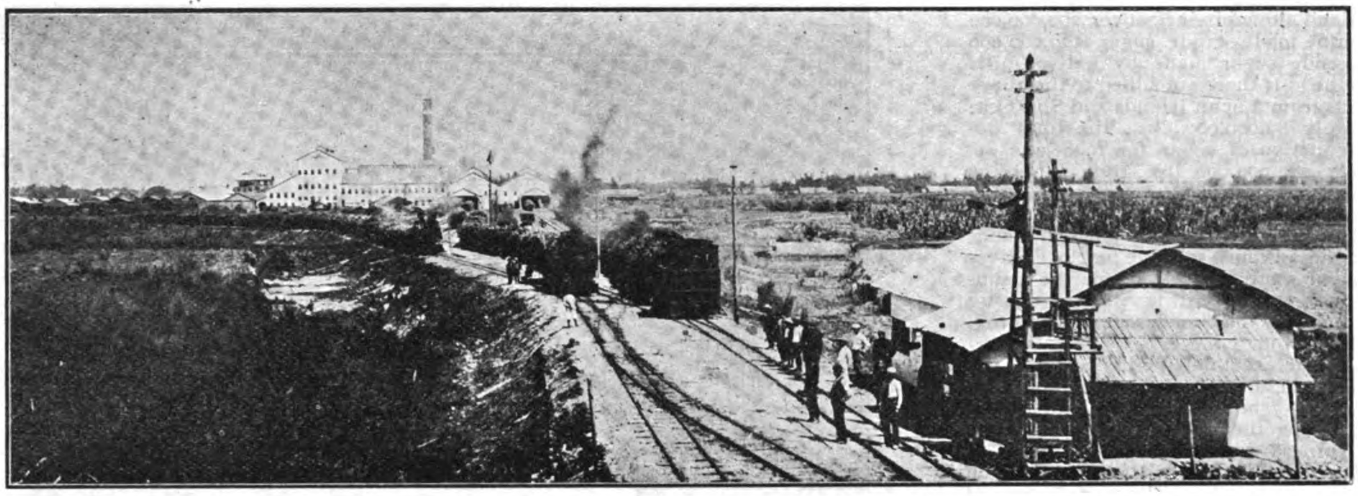
KOHEKIRO MILL OF THE TAIWAN SEITO COMPANY.—CAPACITY: 1000 TONS OF CANE IN 24 HOURS

Notwithstanding the unfortunate check that was placed on its early development, the subject of manufacturing sugar attracted the public attention, and we find that, as early as 110 years ago, a Mr. Kimura published a treatise on the manufacture of sugar, while there were many other eminent men who interested themselves in the subject. By these means a great impetus was indirectly given to the development of the sugar industry in Japan, and the production of sugar had attained considerable proportions during

* By Dr Teijiro Yamamoto, M. P., in Japan's Industries.



AKO MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 3000 TONS OF CANE PER DAY



AKO MILL OF THE TAIWAN SUGAR COMPANY

the years preceding the Meiji Restoration. With the abolition of the clan system of Government after the inauguration of the new régime, protection accorded to the sugar industry by the different clans was withdrawn, and the domestic sugar industry suffered a serious set-back by reason of the competition of imported sugar. This state of affairs turned the attention of the authorities to the encouragement and revival of the sugar industry. The Japanese Government, taking into consideration the fact that beet sugar was extensively manufactured in Occidental countries, and also being satisfied that beet was superior to the cane as raw material (because while the growth of the latter was limited to tropical climates, the former was suitable for temperate as well as cold climates), ordered samples of beetroot from the United States in 1872 and experimented with them in the North-Eastern provinces. Subsequently, in 1876, Mr. (now Marquis) Masayoshi Matsukata, who was Director of the Bureau for the Development of Agriculture, brought to Japan beetroot seeds from France and planted them experimentally in the Norh-Eastern provinces. The results were highly satisfactory, and as a result of the above trials, a sugar manufacturing plant was purchased from France in 1879 at a cost of over Y130,000 which was installed by the Mombetsu Sugar Company, established at Mombetsu in Hokkaido under Government control. The whole business was subsequently transferred to a private concern, which commenced operations under the title of the Mombetsu Sugar Manufacturing Company. Some time afterwards a large sugar manufacturing company was established at Sapporo, in Hokkaido. However, after several years' experience, it was proved that the climate of the Hokkaido was not suitable for the culture of beet, and both of the above concerns were eventually compelled to cease operations, and for some years the question of sugar manufacture on a large scale was shelved. In 1895, however, when the island of Formosa was ceded by China to Japan, the Japanese Government issued regulations for the protection of the sugar industry, and ever since that time the subject of manufacturing the crude product from sugar cane has been attracting the attention of both the authorities and the people, immense strides having since been made in the progress of the industry. At the present time there are ten large sugar manufacturing concerns, worked by machinery, the total capital invested being Y50,000,000 and the value of the machinery installed exceeding Y10,000,000.

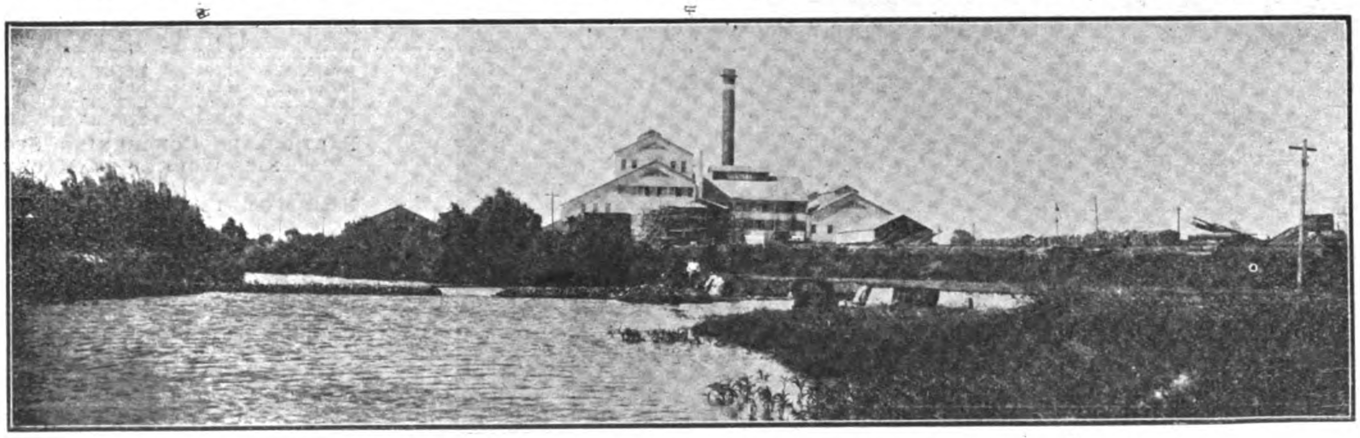
The general business is divided into two sections, namely, the sugar refining and crude sugar industries. In Japan the former industry was developed by degrees, and in 1895 the Nippon Sugar Refining Company was established by Baron Eichi Shibusawa and others, while in Tokyo Mr. Tosaburo Suzuki inaugurated The Nippon Refined Sugar Manufacturing Company, and in both machinery of the latest and most improved pattern was installed. Although afterwards a few other sugar refineries were established, these were either bought up or incorporated, so that at present there are only three sugar refining companies in Japan, namely, Dai Nippon Sugar Manufacturing Co., Ltd. (Capital Y12,000,000), Yokohama Sugar Refining Co. (Capital Y2,250,000) and Kobe Sugar Refining Co. (Capital Y2,000,000) excepting those under contemplation and a few concerns which are engaged in a subsidiary industry of sugar manufacture in Formosa. The total producing capacity per day is about 800 tons, the total output for 1908 being approximately 1,500,000 bags.

The companies manufacturing crude sugar are almost all located in Formosa where the industry has been engaged in for more than a century, though of course since Japanese capital and knowledge have been applied to the development of the industry in the island it has shown marked progress. The Formosan Sugar Manufacturing Co., the pioneer of the industry on the new basis, was established in 1900, and was followed by the Yensuiko Sugar Manufacturing Co. and a few others. As the result of assistance and encouragement afforded by the authorities, the yearly output has been speedily augmented so that in 1908 there were eight large companies and about 900 native sugar mills, the latter being of a most crude and primitive description. The producing capacity is as follows:—

Sugar Manufacturing Cos. with new machinery	8 Companies.	184,140,000 lbs.
Improved native sugar mils	53 do.	63,648,000 ,,
Old native sugar mills	845 do.	22,824,000 ,,
Total		270,612,000 ,,

Thus Formosa stands first as the sugar-producing locality of Japan, the Luchu Islands coming next, having developed their sugar industry as the result of the promulgation of the sugar protection regulations in 1906. A few other localities are also supplying crude sugar to the refineries on the main land.

The total amount of sugar consumed in Japan may fairly safely be estimated at from 500,000,000 lbs. to 550,000,000 lbs. per year. The amount of consumption about the year 1895 was not more than 350,000,000 lbs. and while there may have been some fluctuations during the interval as the result of the sugar consumption tax and the effects caused by the additional extraordinary special taxes levied after the late Russo-Japanese war, the demand for sugar has been gradually increasing to a considerable amount up to the present day, and it is also evident that there will be a further increase in demand in the future. Until a few years ago, 150,000,000 lbs. was supplied by domestic companies, while the balance, 350,000,000 lbs., was supplied by imports from foreign countries. Of late, however, the sugar industry of Formosa has undergone such unprecedented expansion

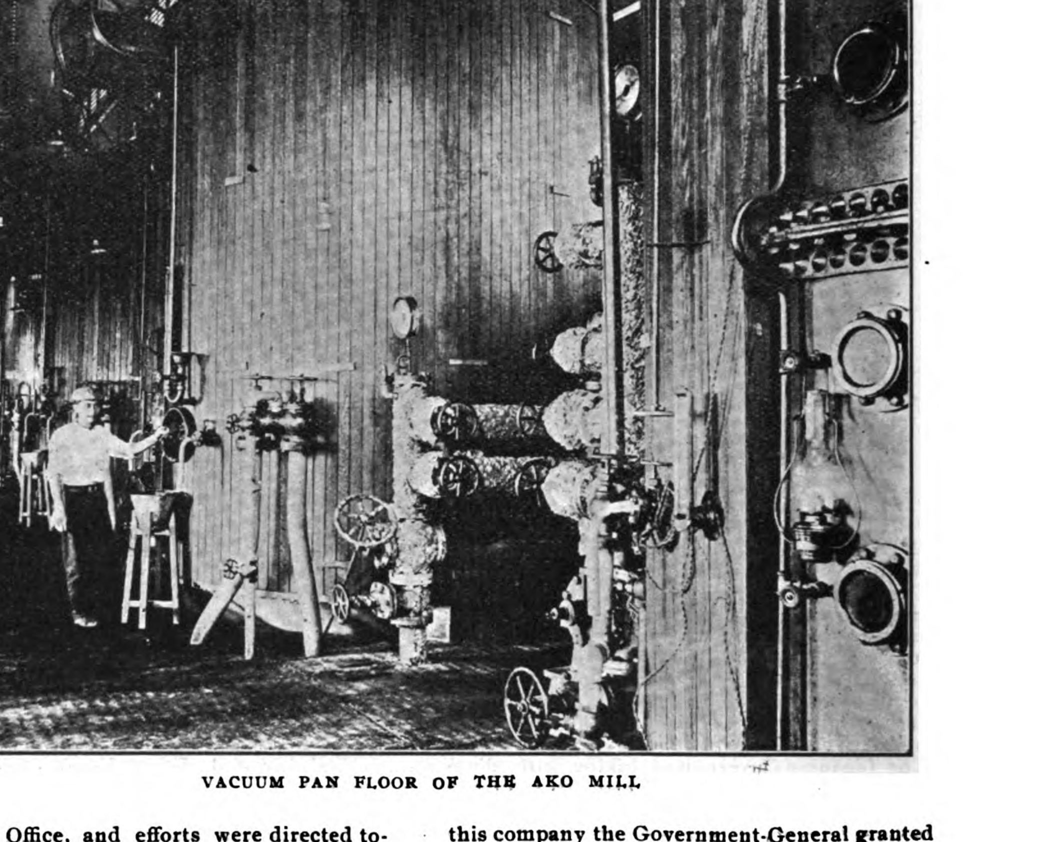


SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 1000 TONS OF CANE PER DAY

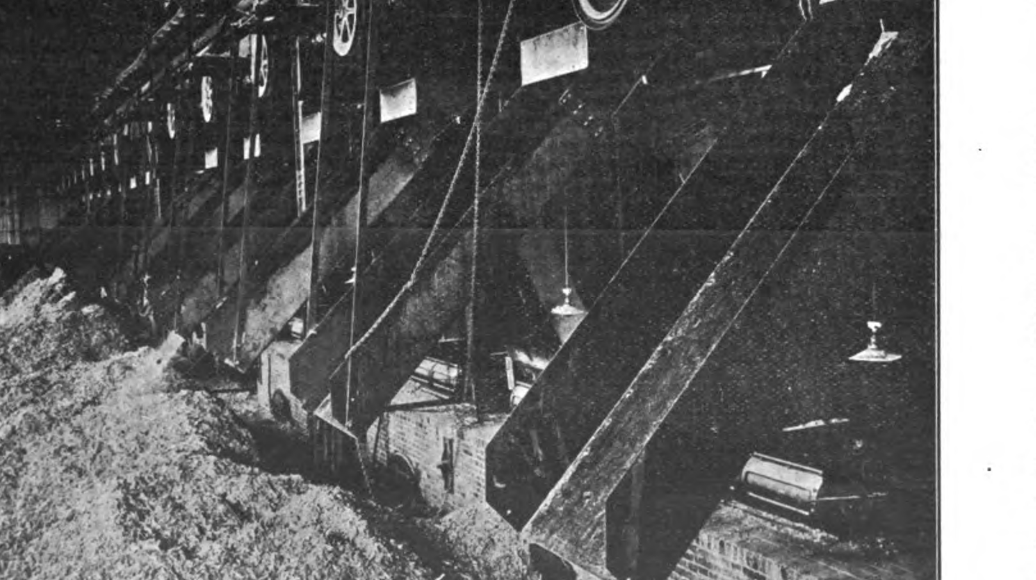
that the island alone produces over 200,000,000 lbs. (Machine-made crude sugar 120,000,000 lbs. and crude sugar made by native mills 80,000,000 lbs.). If there are added to the above the products from Luchu Islands and Shikoku, approximately 80,000,000 lbs., the total domestic production of sugar for 1908 was approximately 280,000,000 lbs., thus supplying more than half of the total yearly consumption of sugar in Japan.

Viewed from climatic and geological standpoints, Formosa is most suitable for the cultivation of sugar cane as well as for the manufacture of sugar, and it is not surprising that the industry has made such rapid progress in the island.

Although the exact date of the origin of the sugar industry in Formosa cannot be stated with certainty, it may be taken for granted that it commenced together with the immigration of the Chinese into the southern parts of the island. After the occupation by the Dutch in 1624 they engaged in the manufacture of sugar quite extensively and exported a considerable quantity to Japan. Records of 250 years ago show that at about that time the process of sugar manufacture appears to have been improved, and the yearly production was greatly increased as the result of the increase in demand and expansion of trade on the island. Although there may have been some fluctuations during the interval, sugar formed the most important article of export from Formosa, ranking next to Oolong tea and on the same scale as rice and camphor. After the island had been ceded to Japan, the Japanese Government established a Government-General for the administration of the island and devoted its entire energy to the development of its natural resources. A Department for the development of resources was instituted in the Civil Administration Bureau, special attention being thus paid to the question of industrial and agricultural development. In 1902 a Formosan Sugar Bureau was established, followed by the promulgation of the regulations for the encouragement of the industry. In 1907 the Bureau was transferred to Tainan. Previous to the above, in 1903, an experimental sugar cane plantation had been established at Daimokuko in order to make various experiments on sugar manufacture and also for the cultivation of sugar cane, several plantations being also opened in other districts. The name of the above institution was afterwards changed to the Sugar Industry Experimental Office, and efforts were directed towards the improvement of the plants. Subsidies were granted for fertilising and irrigation so as to encourage the cultivation of waste land, and special privileges were granted to the promoters of sugar manufacturing concerns, such as allowing preliminary expenses, subsidies for the purchase of machinery, and giving free land for plantations. In fact, no efforts were spared by the authorities for the encouragement of the industry. At the same time steps were taken in the main island to encourage capitalists to invest in the establishment of sugar mills with the latest and most improved machinery. In 1900 the Formosan Sugar Manufacturing Company was inaugurated, this being the first of the kind entirely based on the new system. To this company the Government-General granted a subsidy of Y12,000 and the factory was considered a model one. The Government-General further purchased new machinery and encouraged its use, the result being the establishment of the Yensuiko Sugar Manufacturing Company, and a few other smaller concerns of a similar kind. The authorities not only paid great attention to the sugar manufacturing business, but also to the agricultural industry. As early as the year 1896, sugar cane plants were introduced from the Hawaiian Islands and experimented upon in Formosa, this being the first Hawaiian sugar cane ever planted in the island, those previously introduced being the South China or Java species. Careful attention was also paid by the authorities to the improvement of fertilisers, irrigation, cultivation and reclamation of waste land, etc., all of which helped the improvement and progress of the industry in the island, and thus it has attained its present development.



VACUUM PAN FLOOR OF THE AKO MILL



THE BOILER ROOM OF THE AKO MILL: SHOWING THE BAGASSE CONVEYORS FEEDING THE BURNERS AND DEPOSITING THE EXCESS FUEL ON THE SIDE

The following table shows the development of the sugar industry in Formosa:—

OUTPUT OF SUGAR CANE.

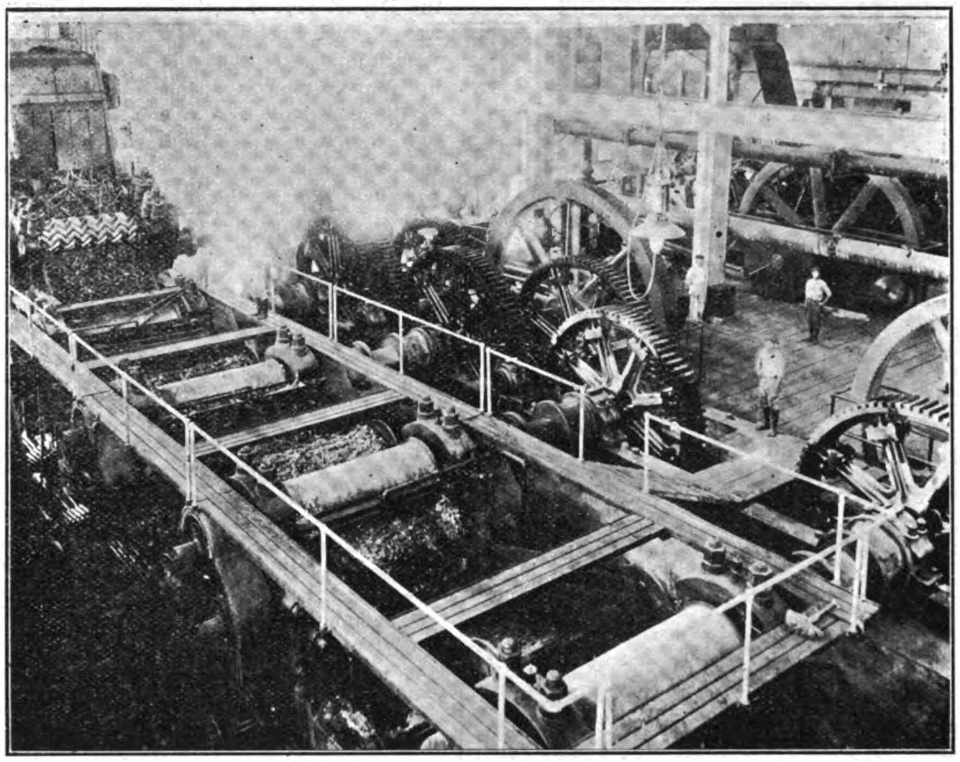
	Area planted with improved plants.	Output of improved plants	Area planted with old plants.	Output of old plants.
	ko.	lbs.	*ko.*	lbs.
1903......	37	4,461,700	16,489	678,699,292
1904......	240	18,175,189	21,354	1,056,799,740
1905......	800	48,321,000	24,177	1,023,902,366
1906	2,615	182.308,882	32,190	1,496,987,524
1907......	7,872	520,489,502	21,987	843,105,789

OUTPUT OF CRUDE SUGAR

Year.	Total area.	Total amount of Sugar Cane.	Total amount of Crude Sugar.
	ko	lbs.	lbs.
1903......	16,526	863,157,902	50,680,561
1904......	21,594	1,074,974,929	75,834,354
1905......	24,976	1,072,228,366	82,632,658
1906......	34,806	1,679,245,906	127,388,416
1907......	29,859	1,363,595,291	106,175,955

PARTICULARS CONCERNING SUGAR COMPANIES WORKED BY MACHINERY.

Name of Co.	Establishment. Year.	Capital. Yen.	Paid-up Capital. Yen.	Compressing capacity per day. Tons.
Formosan Sugar Mfg. Co.	1900	12,000,000	....	4,300
Dai Nippon Sugar Mfg. Co. Formosan Factory....	1905	4,500,000	4,500,000	1.200
Yensuiko Sugar Mfg. Co.	1903	5,000,000	1,250,000	1,380
Meiji Sugar Mfg. Co.	1906	5,000,000	1,750,000	1,560
Toyo Sugar Mfg. Co.	1907	5,000,000	2,500,000	1,000
Shinko Sugar Mfg. Co.	1903	600,000	600,000	500
Bain Sugar Mill.	1905	350,000	350,000	300
			Total......	10,230



THE MILL ROOM OF THE AKO PLANTATION, A NINE ROLLER MILL WITH "KRAJEWSKI" CRUSHER AND A REGRINDER, MAKING IN ALL FOURTEEN ROLLS.—ONE OF THE LARGEST AND MOST POWERFUL MILLS IN THE WORLD

As may be observed from the above figures, the sugar industry on modern principles is but of recent origin in Japan, and there appears to be a great field for further development in the future. The climate and soil of Japan are very well adapted for the cultivation of both sugar cane and beet, although the production of sugar cane per *ko* in Formosa, for example, ranges from 90,000 to 120,000 lbs., and is rather low compared to the production in Java, Cuba and Hawaii. Ever since the introduction into Formosa of Hawaiian sugar cane, the quality of both Lahina and Rose Bamboo has improved, and the amount of production has been greatly augmented. As the superiority of the above qualities are fully recognised, they are being introduced in great quantities, so much so that in 1908 the area planted with them occupied 80% to 90% of the total area of the sugar cane plantations. It is expected that so long as it does not interfere with the rice paddy fields there will be a further increase in the area of sugar cane plantations, as well as for the improved varieties. Moreover, in the event of a more superior quality of sugar cane being cultivated, a further impetus will be given to the development of the sugar industry; and if the best variety of sugar cane is selected, proper attention is paid to manuring, etc., by skilled labour, the necessary steps are taken for irrigation and drainage, improved agricultural machinery such as steam ploughs, etc., are introduced, and the method of cultivation is based on scientific principles, it is expected that there will be almost no limit to the expansion of the industry. Moreover, many sugar manufacturing concerns have arisen lately with the most improved types of machinery, some of the sugar mills being more extensive than those in Hawaii, so that the present productive power of the industry in Formosa has reached an immense amount.

With regard to the refining of sugar, its import, which averaged 200,000,000 lbs. per year for the period of six years from 1895 to 1900, decreased to below 100,000,000 lbs. on an average during the following six years—1901-1906—which forms most striking evidence of the marked development of the industry.

If progress is continued at the present rate, Japan will be in a position to supply in the near future the entire home demand of 500,000,000 lbs. and export her surplus product to foreign countries, and it would not then be a difficult matter for Japan to occupy the foremost position among sugar-producing countries of the world.

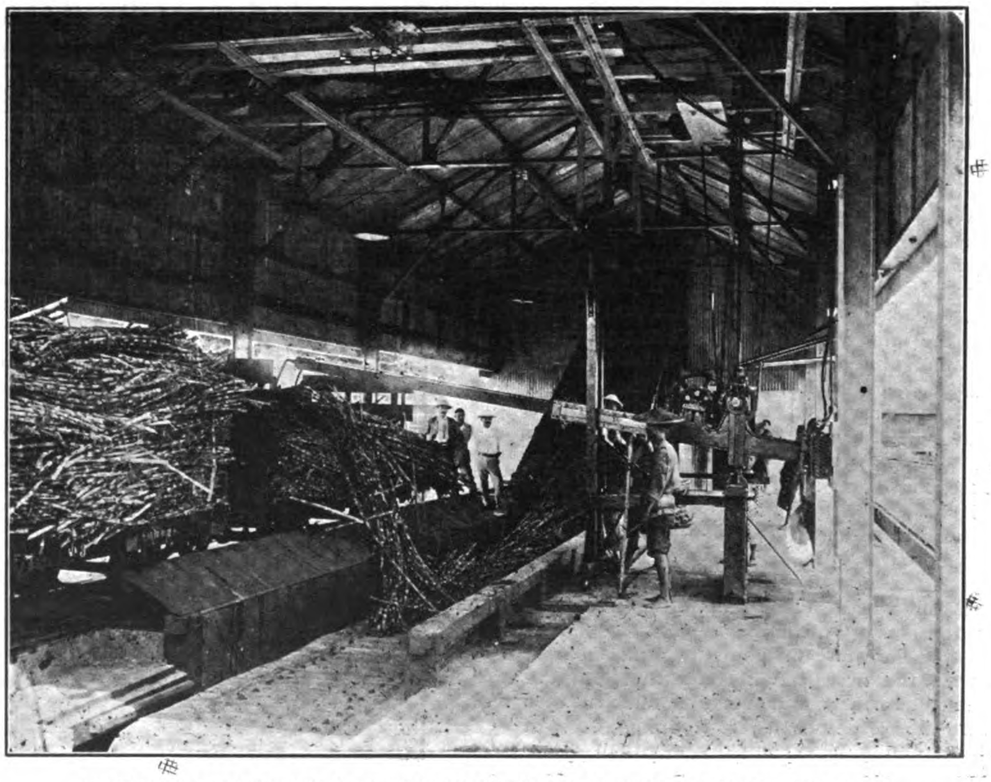
In concluding the present treatise there is one point which requires consideration, and that is the question of taxation. In Japan ever since the beginning of the sugar industry, protective measures have been adopted, which have helped the rapid development of the industry. But with the promulgation of the Sugar Consumption Tax Law in 1901, followed by the Special Extraordinary Tax levied in 1904, and again the increased taxes in January, 1905, the tendency of increase in the demand for sugar suddenly suffered a check, and the expense and labour which had hitherto been expended by the Government were to a large extent nullified, and consequently the development of the sugar industry suffered considerably. The fallacy of such a policy at last appears to have been appreciated, and some of the taxes are destined to be abrogated sooner or later. At the same time, if on the one hand, by the economical utilisation of land and improvement in the agricultural side of the industry, the cost of production is economised, there appears to be a bright prospect before the sugar industry in Japan. Moreover, the soil of Korea and Manchuria, being very well fitted for the cultivation of beet, if that is developed, it will not fail to be of great benefit to the sugar industry of Japan by thus supplying cheap raw material. The cheapness of labour in the above localities is also another great advantage which will contribute towards the further progress and development of the sugar industry of Japan.

Note:—"Ko" corresponds to 25 acres.

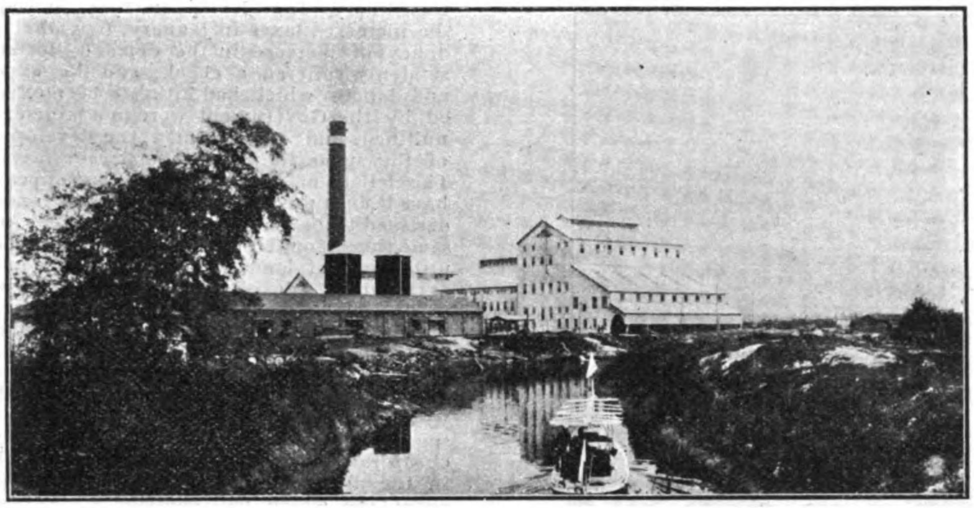
DAI NIPPON SEITO KABUSHIKI KAISHA

(THE JAPAN SUGAR MANUFACTURING CO., LTD.)

This company is the pioneer of the sugar refining concerns of Japan. The development of the Japanese sugar refining industry is of quite recent date. Even after the Restoration of the Meiji era it was found impossible for Japanese refined sugar to compete with that imported from Java and Hongkong. This being a very great loss to the country, an undertaking was set on foot, about the year 1892, for the purpose of refining sugar, but this had to be dropped on account of the outbreak of war between Japan and China. Subsequently, in 1895, the Yayeyama Sugar Refining Company was floated, but the concern was worked on old methods and therefore was not altogether a success. In 1896, the Nippon Sugar Refining Co., the predecessor of the present Japan Sugar Manufacturing Co., Ltd., was established in Tokyo, a year after the war had been concluded between Japan and China, by Mr. Tozaburo Suzuki and a few others, with a capital of Y300,000, the object of the new enterprise being the refining of sugar by means of the latest and most improved machinery, and also the



CANE UNLOADING DEVICE AT THE KYOSHITO MILL OF THE TAIWAN SUGAR CO.



THE KOHEKERU MILL AND CANAL OF THE TAIWAN SUGAR CO.

manufacture of crystal sugar by machinery, and by a new process invented by Mr. Suzuki. In the following year a new branch of the undertaking, that for the manufacture of rum, was opened, and business gradually expanded, so that in 1899 the capital had to be increased to Y2,000,000. However, a reaction set in soon after this. In addition to the great increase of imported Hongkong sugar, a large increase of beet sugar was also coming in from European countries, as the result of subsidies afforded to the beet sugar industries in those countries. Moreover, as the revised tariff was to come into force imposing an increase of duty on sugar, many firms imported large stocks in anticipation, the result being a marked fall in the price of the article. The company was thus beset with difficulties on all sides, which, however, it was able to successfully overcome. After some years several causes combined to improve the condition of the company. Within a few years the cheap raw sugar imported in anticipation of the increase of duty was entirely consumed, the price of sugar all over the world improved, and with the failure of the beet crop in Europe and the rebate law coming into force in Japan in 1902, the business of the company was involuntarily placed on a better footing. Also, as a result of the resolutions adopted at the Sugar Conference held in Brussels in 1902, by which subsidies on beet sugar were abolished in the European countries, the import of beet sugar into Japan entirely ceased The above circumstance proved of great advantage to the business prospects of the company, and the crystal sugar manufactured was not only sufficient to supply the demand for the home market but was also exported to China and Korea.

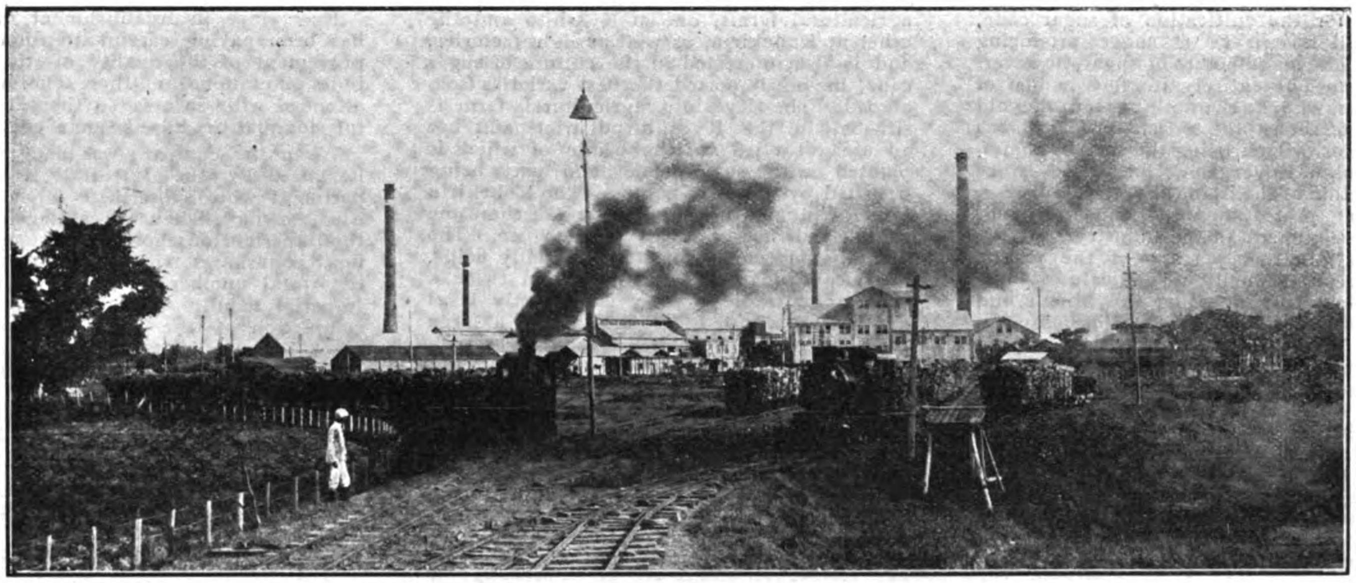
In the same year that the present company was inaugurated, the Nippon Sugar Refining Company, of Osaka, was established, under the joint promotion of Messrs. Eiichi Shibusawa (Baron), Jutaro Matsumoto, and a few others with a capital of Y1,500,000. Subsequently, in 1902, Messrs. Suzuki & Co., of Kobe, established a sugar refinery at Dairi, in the vicinity of Moji harbour, with a capital of Y2,000,000. These three sugar refining concerns competed with each other for some time, but the disadvantages of useless competition being ultimately fully recognized, the question of amalgamation was mooted, and as the first step in that direction, the present company was amalgamated in 1906 with the Nippon Sugar Refining Co., of Osaka, and a new company was then established, called the Dai Nippon Sugar Manufacturing Co., with a capital of Y 6,000,000.

FORMOSAN CANE.

The business of the incorporated concern was greatly extended, the company engaging in the manufacture and sale of sugar both refined and crystallised, alcohol and animal charcoal. Dr. Sako, a prominent official of the Department of Agriculture and Commerce, was elected President, and in the following year the Dairi Sugar Refinery was bought up for Y6,500,000 so that the total capital of the company was augmented to Y12,500,000 with a corresponding expansion in its manufacturing capacity. The subsequent depression in the business world caused a decrease in the sale of the products, which fact, coupled with several other causes, placed the affairs of the company in a most difficult position and resulted in the resignation of the entire Board of Directors, and in the election of the present members of the Board. Since the present directors have taken up office they have been strenuously labouring for the readjustment of the company's affairs in order to place its business on a sound basis. It is confidently expected that with the revival in the conditions of the market and the readjustment of the Sugar Tax Law, the company will be able to regain its former prosperity. Moreover, as there is a tendency towards a marked increase in the export of the company's crystallised sugar to the Chinese and Korean markets, the future prospects of the company's business are very encouraging.

REFINERIES.—The refineries of the company are located at Tokyo, Osaka, and Dairi, the Tokyo refinery being divided into two, known as the No. 1 and No. 2 Refinery respectively. The capacity of No. 1 Refinery was increased to 127 tons per day in 1908, while the No. 2 Refinery, which was established in 1901, was extended in 1904 to a capacity of 100 tons and in 1907 to 127 tons per day. The machinery installed in the above two refineries was first purchased from Messrs. Blair, Campbell & McClean, of Scotland, James Buchanan & Sons, of Liverpool, and the Caledonian Foundry and Engine Works, Greenock, and also from Messrs. Watson, Laidlaw & Co., of Glasgow. Later, the centrifugal molasses separator was ordered from the Suzuki Iron Works, under the management of Mr. Tozaburo Suzuki. The crystallised sugar factory was first established in 1896 and it was extended in 1906, the addition being made of a new crystallised sugar manufactory. The machinery installed at the Osaka Sugar Refinery is by Messrs. Blake, Barclay & Co., Greenock, Scotland, with a capacity of 150 tons per day. Recently machinery for the manufacture of cube sugar, the demand for which is daily increasing, was purchased from Messrs. Harsey & Co., U. S. A. The machinery installed at the Dairi Sugar Refinery was purchased from Messrs. Babcock & Willcox, Harvey & Co., Watson, Laidlaw & Co., and James Buchanan & Sons, and is at present being worked at a capacity of 300 tons per day.

WAURI MILL OF THE TAIWAN SUGAR CO.—CAPACITY: 180 TONS OF CANE PER DAY.



KYOSHITO MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 1100 TONS OF CANE IN 24 HOURS

Thus the total yearly output from the three refineries amounts to about 350,000,000 lbs., which is more than sufficient to supply the total yearly consumption of refined sugar in Japan, estimated approximately at 230,000,000 lbs. The quality is of first grade, competing successfully with the imported foreign sugar. It has also been exported to China and Korea of late to the extent of about Y10,000,000.

Besides the sugar refineries above mentioned, a new raw sugar factory was established in January, 1907, within the jurisdiction of Torokucho, in Formosa, with a capital of Y4,500,000 having a sugar cane plantation of over 15,000 acres. The producing capacity being 1,200 tons per day, it is in a position to supply 14,000 or 15,000 tons of raw sugar per year. Within the plantation there are over one hundred miles of railway for the company's special use. As more new machinery has been ordered from Braunschweigische Maschinen Bonanhalt, Germany, the producing capacity will be still further increased in the near future. Up to the present raw sugar has been almost exclusively imported from Java, but with the development of the raw sugar industry in Formosa it has been decided to use 250,000 bags of Formosan raw sugar for 1910, and it is expected that Formosan raw sugar will ultimately replace that from Java.

At the time of the inauguration of the company it undertook the manufacture of crystallised sugar together with sugar refining. In June, 1896, when the capital of the company was increased to Y600,000, the manufacture of rum was added. The crystallised sugar (sugar candy) is made by means of a new invention of Mr. Tozaburo Suzuki, which gives results not yet attained in Europe and America, and which is the cause of the increase in the demand in China and other countries. Besides this, alcohol is made from the molasses and is of pure quality, and in compliance with the pharmaceutical regulations. The manufacture of cube sugar was commenced in 1907. Another product of the company is moist sugar, for which the Japanese have a great liking. This variety is very palatable and is more advantageous in use for the manufacture of confectionery, having properties which cannot be obtained from the imported sugar.

The company has been granted the privilege of specially supplying its products to the Yokosuka Naval Station, and also to the Imperial Household Department, these honours greatly enhancing the credit of the company. The company was also awarded a First Class Medal at the 5th National Industrial Exhibition, in 1903, and a Silver Medal at the Tokyo Industrial Exhibition in 1907.

The present Board of Directors is composed of the following, who are all prominent members of business circles in Japan:—

President: Raita Fujiyama, Esq. Managing Directors: Nagayuki Takayama, Esq., Ryoritsu Izawa, Esq. Directors: Seki Hoshino, Esq.; Yoshikane Hamamoto, Esq.; Seizo Nakamura, Esq. Auditors: Yoshio Sashida, Esq.; Hisayoshi Ounabara, Esq.

MEIJI SEITO KABUSHIKI KAISHA

(THE MEIJI SUGAR MANUFACTURING CO., LTD.)

The promising position which Formosa occupies as a sugar producing district is fully recognised. The Formosan Sugar Manufacturing Co., Ltd. (Taiwan Seito Kabushiki Kaisha) was the first concern of the kind to be established and many others followed in its train at the period of the great business boom which occurred in Japan upon the conclusion of the Russo-Japanese war. The Meiji Sugar Manufacturing Co., Ltd., was inaugurated in December, 1906, being one of those factories installed with machinery of latest type which has continued to carry on business up to the present.

The company owns three sugar factories, namely No. 1, No. 2 and Mato. The first mentioned is located in the proximity of the main office, the No. 2 factory is situated at Saiho Matosho, Daitoro, Kagicho, and the Mato factory is in Matosho, Tainancho. The total number of hands employed, including both the clerical staff and labourers is about 260.

The work at No. 1 factory was commenced from November, 1907, and that at the No. 2 factory is expected to begin from 1910. The sugar extracting capacity per diem of the No. 1 factory is estimated at 750 tons, No. 2 factory at 1,000 tons and the Mato factory at 60 tons. Thus, if the average production of compressed sugar from the factories, excepting No. 2, be taken at 800 tons, the total amount of sugar extracted for 120 days—one sugar manufacturing term—would amount to 96,000 tons, and assuming the percentage of refined sugar per ton to be 10, the total amount of refined sugar produced would amount to 9,600 tons or 14,400,000 lbs. The above is the actual average yearly output of the company's refined sugar, but in the event of the raw materials obtainable from the sugar plantations in the locality being increased there is no doubt that the productive capacity of the concern would be considerably augmented, and this without taking into consideration the completion of work of the No. 2 factory.

The company has a line of railway in operation for the transportation of raw materials, the total length of the line at present working being about 50 miles. When the whole length of the line is completed the total mileage will amount to 100. There are eight locomotives of 15 tons weight each, 400 freight cars of 4-5 tons capacity each, which are chiefly employed in the transport of raw materials but also in general railway traffic for freight and passengers.

The sugar manufactured by the company is all sold to the sugar dealers of the main island, being intended for home consumption. As the amount of production is gradually increasing it is intended to send a part of the raw sugar to the main island to be used as raw materials for the refineries.

The present conditions of the company's business are as follows:—

Capital	-Y-5,000,000
Paid-up capital	-Y-2,750,000
Annual productive capacity	1,810 tons.
Railways	100 miles,
Fields	29,685 *ko.*
Sugar Plantations	2,526 *ko.*

The present members of the Board of Directors are as follows:—

Presiding Director: Senkichi Ogawa, Esq.
Managing Director: Hanji Soma, Esq.
Directors: Masabumi Asada, Esq.; Yoshihisa Usui, Esq.; Sumisaburo Uemura, Esq.
Auditors: Naoyoshi Yamamoto, Esq.; Baron Morimasa Takei.

TAIWAN SEITO KABUSHIKI KAISHA.

(THE FORMOSAN SUGAR MANUFACTURING CO., LTD.)

Formosa has been noted since olden times for its suitability in climate and geological

TAIWAN SUGAR COMPANY.—PLANTATION RAILWAY BRIDGE (5300 FEET) OVER THE TAMSUI RIVER

formation for the cultivation of sugar cane, and is well known as a sugar producing country. The manufacture of sugar, however, having been left entirely in the hands of the natives who knew nothing but the old primitive methods, the article produced was very inferior. Such being the state of affairs, the Formosan Government has, ever since the occupation of the island by the Japanese, been giving protection and encouragement to the development of the industry. On the other hand, in 1900, as one of the results of this encouragement, a syndicate of Japanese millionaires, including the Mitsui and Mori families, established the Formosan Sugar Manufacturing Co., Ltd., with a capital of one million yen, the object of which was the renovation of the process of sugar manufacture. The main office and the factory were established at Kyoshitosho, in Tainan, Formosa, and the manufacture of sugar by means of the latest type of machinery was commenced, the appliances being the very first of the kind ever used in the island. In order to encourage the development of the industry the Formosan Government granted a subsidy of 6% per annum on the paid-up capital, the Imperial Household Department taking up one thousand shares.

In the following year (1902) the work was commenced, and although very many difficulties were experienced at first, the business flourished, so that although the term of subsidy terminated in 1905, the concern was not only able to maintain itself, but the business was greatly expanded, the capital being increased to Y5,000,000, two new factories being erected, sugar cane plantations opened, and a special railway constructed within the company's grounds in order to facilitate the conveyance of raw materials and the manufactured sugar. Subsequently, in 1905, a new company, the Daito Sugar Manufacturing Co., was inaugurated with a capital of Y5,000,000, and with a factory at a place called Ako, which, being incorporated with the Formosan Sugar Manufacturing Co., became at once one large concern with a capital of Y10,000,000. Previous to this, several other sugar manufacturing enterprises were started, among the most important of which was the Tainan Sugar Manufacturing Co., which was established in 1904. The latter company owned a very rich sugar-cane plantation, and was also granted a subsidy from the Formosan Government. The company being in close proximity to the Formosan Sugar Manufacturing Co., it was eventually incorporated in 1909 its capital being augmented to Y12,000,000 and the business further expanded. Thus the business of the company, notwithstanding the fact that not more than ten years had elapsed since its inauguration, was greatly enlarged as the result of the enthusiastic backing of both the Government and the people, as well as by the able management of the Directors, and it is now one of the most flourishing sugar mills in Japan. In the management of the business a most conservative policy was followed, aiming at a sound and healthy development, and a certain portion of the yearly dividend being set aside for placing the foundation on a firmer basis, so that the company is at present not only one of the largest but also one of the soundest sugar manufacturing concerns in Japan.

The company owns a most rich and extensive sugar-cane plantation in the Ako and Tainan districts, the locality being noted for its fertility and being also the centre of the sugar industry. The whole area is divided into four sections, namely Ako, Kyoshito, Tainan and the Kohekirin sections. The locality is well irrigated and is best suited for the cultivation of sugar cane. The area of the plantations already under cultivation by the natives is over 7,000 *ko*, the whole of the raw material being supplied under contract to the company. The total area for the planting of sugar cane is over 76,000 *ko*, but the area planted with cane can be increased to several times the present extent as the manufacturing capacity of the company is increased. The company owns two agricultural farms, one at Kyoshito and the other at Kohekirin, as well as eight factories, and is also interested in the culture of sugar cane, having imported the best varieties from abroad. The Kyoshito agricultural farm is situated in the Kyoshito district, and has an area of 1,428 *ko*, the whole of which is planted with sugar cane, and part being irrigated by means of pumps. The Kohekirin farm is situated near the factory of the same name, and has an area of 2,989 *ko*. The plantation formerly consisted of paddy fields, the rice from which was harvested twice a year. The whole country is perfectly level and is well suited for farming on a large scale, and also has the advantage of suitability for continual cultivation, the land being very fertile and well watered. The company is at present engaged on an improved deep ploughing process with several sets of steam ploughs manufactured in England. The factories are located in eight places, and are all quite close to the port of Takao, the best harbour in the South of Formosa, the Kohekirin factory having direct communication by water with the harbour. The factory buildings are all constructed of strong iron frames, and the machinery installed is of the latest and most improved types. They have also appliances, specially suitable for Formosa, adopted in conformity with the experience gained by the company during the past few years. The following are some details of the factories:—

Factory.	Situation.	Raw Material compressing capacity per day.	Works started.
Kyoshito No. 1. Factory.	Kyoshito, Tainan.	650 tons	January, 1902.
Kyoshito No. 2. Factory.	"	450 "	January, 1908.
Kohekirin Factory.	Koshiken, Tainan,	1,000 "	December, 1908
Ako Factory.	Kiraisho, Ako,	1,200 "	November, 1908
Do.	extension.	1,600 "	Under construction.
Sharoken Factory.	Sharoken, Tainan.	1,000 "	" "
Wanri Factory.	Wanri, Tainan.	200 "	Already erected.
Alcohol Factory.	Kyoshito, Tainan.	...... "	April, 1908.
Alcohol No. 2. Factory.	At present under construction.	...... "	....

The quantity of sugar-cane which is worked at present is the above factories is enormous, the total amount of raw material compressed being 3,500 tons per day and 450,000 tons for one term extending from December to April of the following year. The output of sugar is over 50,000 tons. In the event of the extension works at Ako and the new factory at Sharoken being completed, and if worked at full load, it will not be a difficult matter to increase the output to 90,000 tons of sugar per year. In order to effect economy in freight of the raw material and the manufactured product, the company has constructed miles of railways for each factory; and has also many locomotives and hundreds of cars for transporting the cane. Telephones have also been installed. The railways are also utilised for general passenger and freight traffic, the Ako line being connected with the Formosan Government's Railway at the Kyukyokudo terminus. In regard to the Ako line, the transportation of over 300,000 piculs of rice and cereals is carried out by the line in one year, so that the income from the passenger and freight traffic is expected to form a considerable source of revenue to the company. The mileage of special railways of the company within each respective area is as follows:—

	Total length.
Kyoshito Section	39 miles.
Kohekirin ,,	23 ,,
Ako ,,	135 ,,
Tainan ,,	62 ,,
	259

The capital, reserve fund, etc., of the company are as follows:—

Capital	Y-12,000,000
Paid-up Capital	10,402,500
Reserve Fund	1,347,300
Last Dividend	14% per annum.

Ever since its establishment, the company has been paying careful attention to the improvement of the quality of the sugar-cane in its plantations, and these efforts have been attended with success, so that at present the inferior qualities have become entirely extinct.

When the company was inaugurated it was honoured by the Imperial Household Department who subscribed for 1,000 shares. Also, in 1907, when its capital was increased the Imperial Household Department subscribed for 8,000 shares, so that at the present time the total number of shares owned by the Imperial Family amounts to 9,000. On the completion of the Trans-Formosan Government Railway in 1908 His Imperial Highness Prince Kan-in attended the function, and the company was also honoured by a visit from his Highness at the Kyoshito factory and the Kohekirin Agricultural Farm.

Chairman:—Shiro Fujita, Esq.

Managing Directors: Teijiro Yamamoto, Esq.; Tadamichi Takechi, Esq.; Taro Masuda, Esq.

Director: Tozaburo Suzuki, Esq.

Auditors: Teikiu Okamoto, Esq.; Kinzaburo Kada, Esq.

Advisors: Takashi Masuda, Esq.; R. W. Irwin, Esq.

YENSUIKO SEITO KABUSHIKI KAISHA

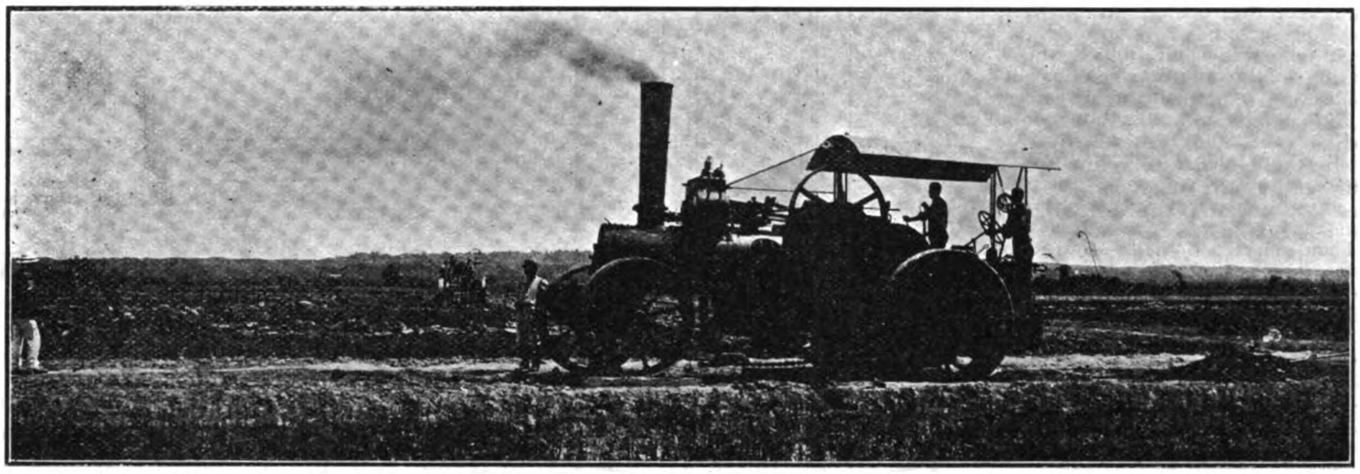
(THE YENSUIKO SUGAR MANUF CTURING CO., LTD.)

The Formosan Government-General, after the annexation of the island by Japan, adopted the policy of the protection of the sugar industry, on account of the fitness of the island for sugar-cane cultivation on the one hand, and on the other hand taking into consideration the probable demand in future for sugar. The regulations for the encouragement of the sugar industry were duly promulgated and a Provisional Sugar Administration Bureau was inaugurated in 1902, and ever since that time very careful attention has been paid to both the agricultural and manufacturing sides of the industry. In 1903, the Yensuiko Sugar Manufacturing Company was established, with a capital of Y300,000 by Mr. Osetsuno with more than 1,700 natives of the island. This concern, which was afterwards reconstructed, was the predecessor of the present company. It was in fact inaugurated on the advice of Mr. Murakami, chief of Yensuiko Administration Office at the time, at the instance of the late General Kodama, the Governor-General, and Baron Goto, Chief of the Civil Administration Bureau. Mr. Soichi Hori, chief of the Tainan Branch of the Sugar Administration Bureau, resigned his post and entered the company as chief engineer. It spite of that gentleman's strenuous and untiring efforts, the fortunes of the company fell into a very depressed condition on account of depreciation in the price of general merchandise and of sugar as the result of the Russo Japanese war, which was still raging at the time. The present managing director, Mr. Maki, joined the company as manager, and in co-operation with Mr. Hori, succeeded in readjusting its affairs, refunding the losses of the preceding term. Moreover, the products of the company gradually gaining a fair reputation in the market, business generally showed considerable improvement. Upon the conclusion of the war, great activity was experienced in industrial circles and a marked improvement was seen in the company's business. The sugar industry of Formosa was at this time attracting the attention of the people of the mother country, and the present company was established with an increased capital of Y5,000,000; it took over the entire undertakings of the former company, a great extension of business being immediately shown. As the result of the protection afforded, direct as well as indirect, by the Government-General and the able management of the company's officials, the business of the company has been very satisfactory and it is at present in a prosperous condition.

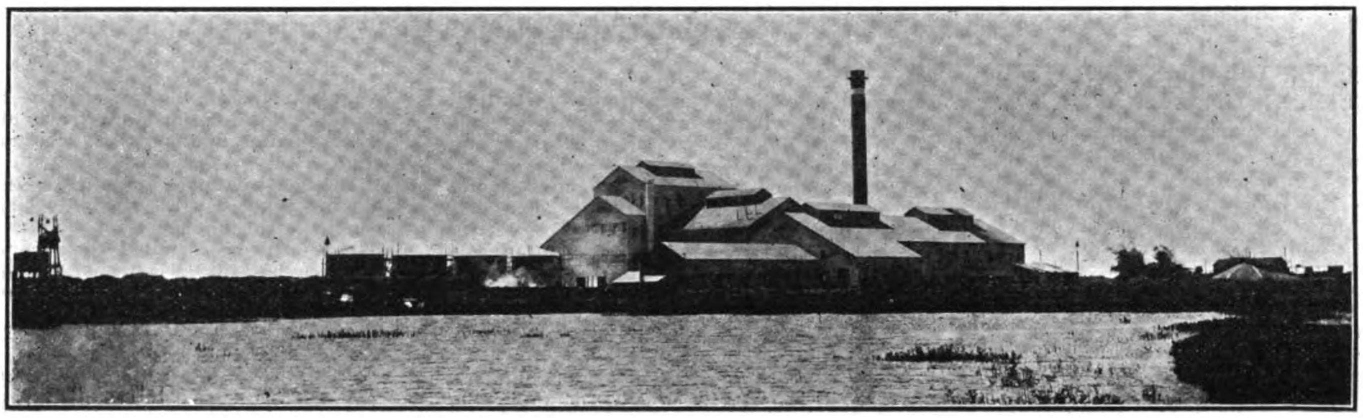
The No. 1 factory of the company, with a capacity of 350 tons per day, was extended in order to meet the increased demand, and in addition a second factory was newly set up with a capacity of 1,000 tons. The machinery installed is all of the latest type, and a special railway system has been constructed for the transportation of raw materials. The company is now entirely free from Government protection and supervision, its business being conducted on absolutely independent lines. The following figures show the present condition of the company:—

Capital	Y5,000,000
Paid-up capital	2,000,000
Capacity	1,550 tons.
Railway	66.47 miles.
Farms	33,638 *ko.*
Sugar plantations	2,616 ,,
Latest dividend	20%

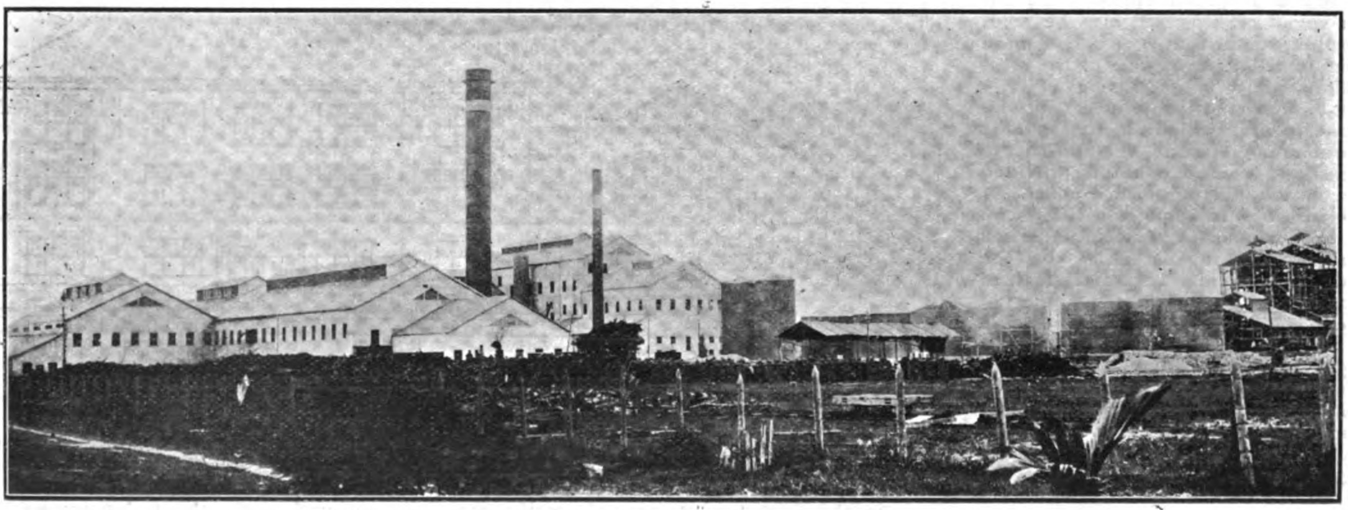
The yearly output of the company is at present about 18,000,000 lbs., which is, however, only a portion of the total producing capacity, it being possible to considerably increase the output of the factories if worked at full load. Two varieties of sugar, Refined Crystal and White, are manufactured, the brands being "ESB," "EBB," and "ESW." They are intended for the home market as well as Manchuria, Korea and Southern China. Recently, as the result of the Sugar Consumption Tax, there has been an increasing demand for the refined sugar of the company, the quality of which is in no way inferior to the same of Java, and it being held in high repute in the market. From 1910 two new varieties of white sugar manufactured by a special process originated by the company will be put on the market, branded



FOWLER STEAM CABLE PLOUGH ON THE KOHEKIRU PLANTATION OF THE TAIWAN SUGAR COMPANY



SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY



REAR VIEW OF THE AKO MILL, SHOWING MOLASSES STORAGE TANKS AND DISTILLERY

YOUNG MEN'S CHRISTIAN ASSOCIATION'S NEW BUILDING IN PEKING

The contribution of $60,000 made by Mr. John Wanamaker to the International Committee of the Young Men's Christian Associations to be utilized in the construction of a large building for the headquarters of the association in Peking marks a new era in the Princeton Work in the Chinese capital. The building proposed will be a model for all future buildings of the society throughout China.

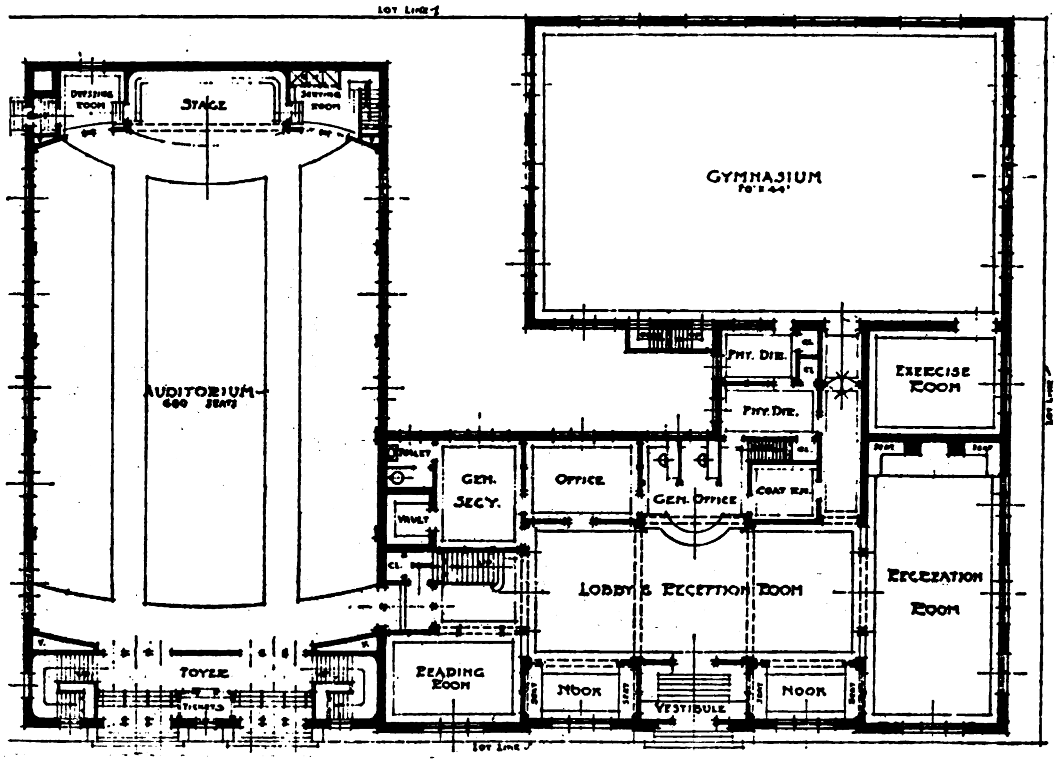
It will be a two-storey building, the main floor comprising a large auditorium and gymnasium, besides the offices of the directors, with recreation, exercise and reception rooms. A large reading room and library will also be included in the plans.

The architect who will supervise the construction is now on his way and a physical director from among recent Princeton graduates has been selected to take charge of the gymnasium.

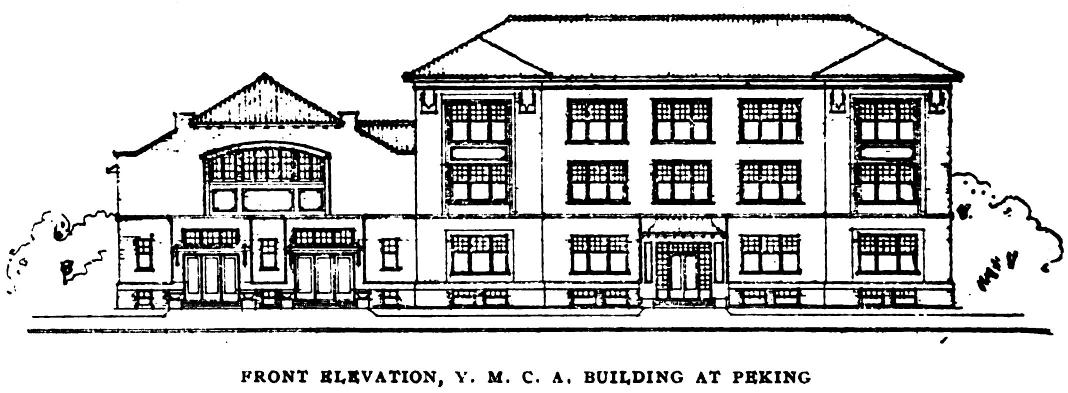
Accompanying this sketch is a floor plan and front elevation of this new structure appearing in a recent bulletin.

The Princeton Work in Peking during the year 1910 proved very encouraging. The financial statement shows a total of receipts of $6,585.35. Liberal support was received from the Chinese and foreign residents in Peking.

A special fund for the erection of secretarial residences is being raised and out of $13,800 required $10,750 has already been contributed. It is expected that the residences will be built simultaneously with the main Y. M. C. A. Building.



MAIN FLOOR PLAN OF PROPOSED PEKING BUILDING.



FRONT ELEVATION, Y. M. C. A. BUILDING AT PEKING

NEW VESSEL FOR THE QUARTERMASTER'S DEPARTMENT OF U. S. ARMY

The Taikoo Dockyard & Engineering Co. of Hongkong have just completed a finely modelled steel twin-screw steamer built to the order of the United States Army, Quartermaster's Department. The vessel is named the "Miley" and is 140 feet overall by 26 feet beam and 13 feet 6" moulded depth, and has been built equal to the highest classification of Lloyd's Society.

The vessel has a continuous main deck, with a long shade deck, two steel masts, and is rigged as a fore and aft schooner. A powerful steam winch is fitted at the fore hatch, capable of dealing with weights up to 10 tons, while in the fore part of the vessel a capable steam warping windlass is fitted. There are two large insulated compartments in the fore hold fitted up for the carrying of fresh meat and perishable goods.

The accommodation for passengers and officers is a special feature of the vessel, the rooms being spacious and well fitted up, panelled in teak and finished in glossed white. The saloon is handsomely finished in polished teak, light brown leather cushions and curtains to match. Special bathrooms, fitted with showers, have been installed for passengers, officers, crew and soldiers.

Triple-expansion engines of the builders' own make, and two boilers, capable of driving the vessel at a speed of 12 knots, have been fitted. Alley and McLellan's patent steam steering gear has also been installed.

The vessel is lighted throughout by electricity, and has a powerful searchlight fitted over the wheel house.

On the trial trip the vessel easily maintained her guaranteed speed, the engines and auxiliaries working very smoothly.

LARGE CONTRACT SECURED BY MESSRS J. G. WHITE & CO.

The Augusta Railway & Electric Company and the Augusta Aiken Railway Company of Augusta, Georgia, have arranged for the following extensions and improvements to their power houses and systems: Estimated cost, approximately $500,000.

The power house extension is planned for two 2,500 K. W. steam turbines, one of which, with the necessary boilers and auxiliaries, will be installed this year. A seven and one-half (7-½) mile transmission line will be built from the power house in Augusta to the power house of the Augusta-Aiken Railway Company near Clearwater, S. C., and a 500 K. W. motor generator set will be installed at this point, and a 300 K. W. set in the present substation near Aiken.

Under an arrangement with the City, the wires in the City of Augusta will be placed underground on three of the principal streets, involving the laying of about three (3) miles of conduits. In connection with this underground work, the Company will also install ornamental poles on Broad Street, Augusta, for carrying its trolley wires and feeders and also clusters of tungsten lamps for street lighting. An extension of about one mile of single track will be made and the reconstruction of a large amount of the present tracks is planned.

The contract for the above work has been

"(Daihaku) A" and "(Daihaku) B," and raw material for sugar refining will also be sold, this being intended for refineries on the main island. The immediate prospects of the company, therefore, are very promising.

The total number of employees and labourers is over 400, of which 148 are Japanese and 258 Formosans. Houses are allotted to each of them, and a club house is provided for their recreation during leisure hours. A system of pensions is in vogue for those who retire from the company's service, a certain part of the profits being set apart for the pension fund, this being a special feature of the company's organization.

The present members of the Board of Directors are as follows, the Directors being all actively engaged in the thorough development of the company's business. Although the company may not be in point of magnitude so extensive as some, the great merit of its having been able to produce goods of the best quality and serving as a model for other concerns should not be overlooked:—

President: Taiji Arai, Esq.

Managing Director: Tetsu Maki, Esq.

Directors: Soichi Hori, Esq.; Shidzuo Sakai, Esq ; Saburosuke Fujisaki, Esq.; Tatsuji Ando, Esq.

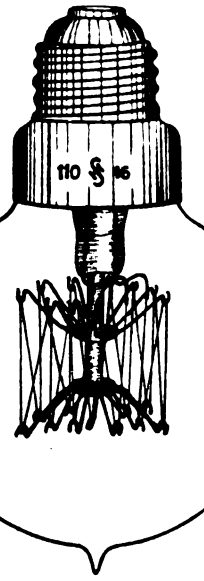
Auditors: Sojuro Iwasaki, Esq.; Susumu Murakami, Esq.; Kobei Abe, Esq.; Ryu Shin Gaku, Esq.

Chief Engineer: Yuji Okada, Esq.

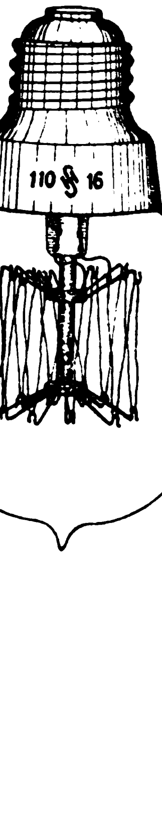
awarded to J. G. White & Co., Engineers and Contractors, 43 Exchange Place, New York.

TANTALUM RAILWAY LAMP TESTS

An investigation has been carried out by the Chicago Railways Company in regard to "Tantalum" lamps, the object being to ascertain the proper allowance for renewals, energy, economy and correct voltage rating of lamps for street car service. Attention was paid to the current consumption of various types of lamps under actual running conditions. It was shown that in the case



of a car burning 25 16 c.p. "Tantalum" lamps, as compared with a similar equipment of carbon lamps, there was a saving of 1,301 kw.-hours in energy on the basis of 1,800 hours lamp burning a year, while a test extending over 600 car-months showed the renewals of carbon-lamps to be 4,269 per car-month and of "Tantalum" lamps 2.21 per car-month. The "Electric Railway Journal", in analysing the results, shows that there was an average saving of 2.5d per car-day on the basis of 1,800 hours of illumination per car-year, and that when "Tantalum" lamps have been installed in all the cars operated by the company there will be a saving of about £5,000 a year. The higher cost of "Tantalum" lamps over carbon lamps is claimed to be balanced at the end of the first year by the longer life of the metal filament. The saving in the current consumption is important in the case of the Chicago Railways, as the Company purchase the power and pay a premium on peak loads.



Development of Visayan Trade and Industries

Philippine trade reports during the last two years show a very remarkable increase in volume both in imports and exports due largely to the operation of the Payne Bill, and from present indications the percentages of increase annually will continue. The total value of imports during the fiscal year 1910, according to customs reports, was $37,061,925, U. S. C., as against $27,794,482 in 1909, and the exports for 1910 were valued at $39,886,852, U. S. C., as against $31,044,158 in 1909. The total volume of trade for 1910 amounted to $76,948,777, U. S. C., as against $59,038,940 in 1909, a gain of $17,909,537. While the bulk of the trade is controlled by Manila, the ports of Iloilo and Cebu in the Visayas are moving rapidly to the fore. In 1909 Iloilo imported goods to the value of $2,106,685 and exported to the value of $3,267,310 a total volume of trade for that fiscal year of $5,374,995. In 1910 Iloilo imported to the value of $2,286,285 and exported the same year $5,413,020, a total volume of trade valued at $7,699,305, an increase in one year of $2,314,310. In 1909 Cebu imported goods to the value of $2,232,619 and exported to the value of $5,678,523 making a total volume of trade of $7,911,242. In 1910 Cebu imported $2,730,379 worth of goods and exported $6,922,169 making a total volume for the year of $9,152,548, or an increase over the previous year of $1,241,304.

During the current fiscal year the increase in trade continues. For the nine months ended March 31, 1911, Iloilo's total volume of trade was $6,821,416 as against $5,583,205 for the corresponding nine months of the fiscal year 1910, an increase of $1,238,211. When it is understood that the greater portion of sugar crop was held in Iloilo storehouses until after March 31, the figures denoting increase over the previous term fall short of the truth.

The same may be said of Cebu. During the nine months ended March 31, 1911, the total volume of trade reached $8,095,854 as against $6,937,295 during the corresponding period in the fiscal year 1910, an increase of $1,158,559.

In both ports there is every evidence that the returns for the fiscal year will show a much greater percentage of increase over the previous year than any other annual return.

While the Payne Bill may well be credited with giving Iloilo a market for its sugar and thus increased the purchasing power of Negros and Panay, another influence has been steadily working for the last two years with the object in view of making it possible for the farmers and businessmen to participate in the phenomenal prosperity that has come to the Visayas. Without transportation facilities, large tracts of rich agricultural lands remained unproductive and all the Payne Bills that might be enacted would not induce the farmer to invade these lands unless he were assured that it were possible to get his products to market.

We refer to the operations of the Philippine Railway Company in Panay and Cebu. When this company undertook to construct modern lines of railway in these two Islands, its officials were not sanguine of immediate success. They realized, as did the pioneer railway lines that invaded America's great west, that the uncultivated country traversed must be settled up and returns in products for industry realized before there could be hope for carrier dividends. The Philippine Railway Co. had, however, the advantage over the American lines, in that they had the benefit of the latter's experience, and were able to proceed to the encouragement of native settlers along the line of railway in an intelligent, effective manner. The company did not expect that there would be a net revenue over and above all charges fixed or otherwise within ten years and the officials proceeded to inaugurate a constructive policy along their lines that has brought returns anticipating expectations by more than five years.

In Cebu the company investigated the soil conditions and proceeded to encourage the planting of maguey. In this work the Philippine Agricultural Bureau gave every assistance. The farmers were instructed and encouraged in producing the best quality of plant and the company placed at their disposal a stripping machine free of charge at the different stations and sidings along the line to demonstrate the advantages of modern machinery. The result has been very satisfactory. Large areas heretofore unproductive were planted in maguey and last year's export returns show an export of this product alone amounting to $231,688 U. S. C.

In the Island of Panay the Company has established an experimental farm at Passi, a point on the railway almost in the center of the great fertile valley traversed.

The adaptability of the soil and climate to successful cultivation of tobacco and bush cotton was here demonstrated and while these industries are in their infancy, there is growing interest among the Filipinos in watching their development.

Active investigation and experimentation on this farm is continual. The latest innovation is the introduction of California grapes, oranges, and lemons and instruction as to the best methods of cultivation. Other fruits will be introduced to supersede the wild uncultivated product of the islands, and with such encouragement and assistance as the railway is now giving the natives, Manila may soon expect to realize a fruit supply of superior quality from Panay.

It must be remembered that the territory traversed by the railway was all virgin land, with the exception of a small fringe here and there in the vicinity of the coast and small rivers where markets were available by water transportation. As the construction of the railway proceeded, these lands were rapidly taken up, and from the evidence available of successful effort during the last two years it is only a matter of a few years more when this valley will represent the greater part of the agricultural wealth of Panay. As for instance, the output of tobacco this season was five times as great as ever before and the sugar increased 300%. The area of rice planted was largely increased and with the advance of the railway two modern rice mills were installed on this new agricultural reclamation. The same may be said of the corn crop.

All this was no easy task. It required great tact and considerate dealing with the Filipinos. It took time to win their confidence and patience and perseverance to keep it, but once the benefits of modern methods of cultivation and better facilities for transportations were realized, it was easy sailing.

And the company is already reaping a substantial benefit. The estimated period to elapse before dividends may be expected has almost been cut in two, and there are those more optimistic. When it is realized that the lines both in Cebu and Iloilo were constructed largely through virgin areas and those cultivated, inhabited by natives whose agricultural methods were no improvement on those of the ancient Egyptians, the progress made has been phenomenal.

The line in Cebu went into commercial operation on July 1, 1909, and it has already developed its carrying revenue to a point where it now covers operating expenses and there is a fair sum available to apply to interest on bonds. For the period ended March 31, 1911, the net operating revenue increased over 100% over the corresponding term for 1910. For the month of March, 1911, alone, the increase over the corresponding period, 1910, was over 50%.

In Panay for the period ended March 31, 1911, the total increase in traffic earnings was over 100%. When it is remembered that this line is not yet in commercial operation and that only the minimum of development along this railway has been accomplished, this enormous increase is remarkable. Indeed, there is every reason to believe that when the line is once

operating commercially, it will not only pay all the operating expense, but immediately make an impression on the interest on bonds. As a compliment to the promoters of this enterprise and to the Philippine Government who gave it encouragement, even the most pessimistic are beginning to realize that the Visayan railway lines will prove a most advantageous investment, and at the same time encourage many blades of grass to grow where none grew previously in those fertile islands, bringing to the inhabitants an area of prosperity of which they never dared even dream.

REVIEWS

Drop Forging, Die Sinking and Machine Forming of Steel—by Joseph V. Woodworth and issued from the presses of The Norman W. Henley Publishing Co., New York. Price $2.50.

This is a practical treatise on the hot and cold machine-forming of steel and iron into finished shapes and comprises much valuable practical information having reference to the tools, dies and machinery used in the manufacture of duplicate forgings and interchangeable hot and cold pressed parts from bar and sheet metal.

"*It Tickled Him*," by George Hoyt Allen. This unique volume contains in narrative form a review of the author's experiences during a trip round the world in the humorist's best vein. Mr. Allen was discovered by La *Follette's Weekly* and was sent by that periodical to gather impressions for the magazine in many climes. Included in this work are the author's experiences in all the ports of the Far East so that the book may give a few hours entertainment to the residents of those cities to see themselves through the kindly specs of Mr. Allen.

Cement Age and Concrete Engineering Consolidated.—Cement manufacturers, architects, engineers and contractors will be interested in the announcement that *Cement Age*, of New York, and *Concrete Engineering*, of Cleveland, two of the leading monthly publications in the cement field, have been consolidated. *Cement Age*, which was established in 1904, has been issued under the editorship of Mr. Robert W. Lesley, Vice-President of the American Society for Testing Materials, and an Associate of the American Society of Civil Engineers, who is also one of the most prominent figures in the cement industry in this country. *Cement Age* has covered the popular features of cement construction, as well as the engineering and manufacturing side of the industry, and *Concrete Engineering* has been especially devoted to that branch of the industry indicated by its title. Beginning whith the January 1911 issue, the two magazines will be consolidated under the title: "*Cement Age* with which is combined *Concrete Engineering*". The magazine will be slightly larger than the present size of *Cement Age*, and will have a type page 6 × 9 inches, thus retaining the distinctive magazine form which has been a popular feature of the older publication.

From Will Irwin's "The Awakening of the American Business Man" in the April Century.

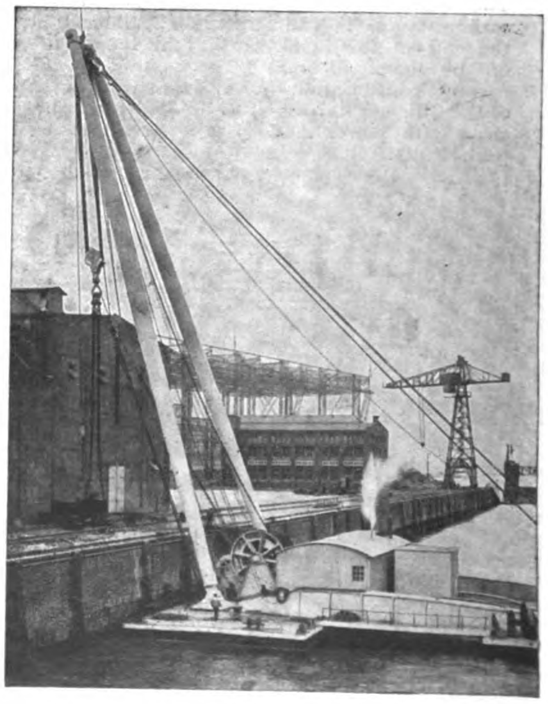
Correlative with this task system, an outgrowth of it, is the scientific selection of men. That few make their choice of vocation from natural bent is an axiom of economics. Born artists there are, born mechanics, born sailors, born builders; these few are driven by something within them to their best lines of endeavor. The rest are pawns of destiny. The average bricklayer, for example, is a bricklayer because that was his father's trade, because friends of the family offered him a good position as an apprentice, or because, when he first plunged into the world, he happened to find work on a new building. No one, he least of all, has taken natural ability much into account. Yet so subtly are men differentiated, and so wide are the processes of industry, that almost every man has his special task in the world, could he but find it.

The Vulcan Shipyard at Hamburg

The branch establishment of the "Vulcan" Shipyard and Engine Works, of Stettin-Bredow, commenced operations about the middle of 1909. The number of the large Hamburg Shipyards was thereby increased by a very prominent concern, and it will, perhaps, interest the reader to learn something about this important establishment and the main yard at Bredow.

In 1851, when the first steps were taken in Germany to build iron steamers and sailing ships, two enterprising citizens of Hamburg—Franz Dietrich Früchtenicht and Franz Wilhelm Brock—established at the village of Bredow near Stettin a small shipyard under the firm of Früchtenicht & Brock. Their business was so successful that already, six years later, the concern has been turned into a joint stock company—the Stettiner Maschinenbau-Actiengesellschaft Vulcan. As a result of the continuous energetic management, and owing to the introduction of locomotive engineering, the works had to be steadily enlarged. Nevertheless, the fact that the German shipbuilding industry was as yet dependent on England with respect to the supply of building materials, auxiliary appliances and fittings, still hampered to a certain extent the free development of this industry. It was not until the German iron and steel industry undertook the production of the half-manufactured and ready-made articles required by the shipbuilder, that a thorough revolution set in and enabled the German shipyards to develop into shipyards and engine works on a grand scale and fully

VISIT OF H. I. H. PRINCE TSAI HSUN TO THE VULCAN SHIPYARD



FLOATING CRANE AT THE VULCAN SHIPYARD

The Manila Times Second Annual Edition, edited by Eleanor Franklin Egan and issued from the presses of the Times Publishing Co. of Manila is one of the most strikingly comprehensive illustrated special editions yet published devoted exclusively to the potentialities of the Philippines. The number if profusely illustrated with reproductions os photographs of scenes in the Philippines portraying native life and customs and presenting in attractive form the natural beauties of America's Farthest Frontier.

The extensive developments of public works, the opening of railways, together with the impetus given native industries by the liberal policy of the American Government is splendidly set forth. Typographically, the issue is a credit to the publishers and compares favorably with the most modern pictorial magazine of the day.

The number has been widely circulated and will certainly aid greatly in directing more favorable attention to the islands and serve in large measure to remove much of the prejudice that only total ignorance of the rich promise to industry and well directed effort for which the islands stand, makes possible.

Among the leading articles are "The New Philippines" by Martin Egan; "Change in Trade Channels" by Col. H. B. McCoy; "The March of Empire Westward to the East," by Harold M. Pitt; "Progress of Scientific Research" by Dr. W. E. Musgrave; "Medical Education in the Philippines," by Dr. Paul C. Freer; "The Philippine General Hospital", by Dr. John R. McDill; "Medieval and Modern Manila," by Lewis Harsant; "Education in the Philippines," by Frank R. White, and many other articles covering the industries and resources of America's richest insular possession.

equal to the English yards. Among the German shipyards the "Vulcan" to day holds a leading place. Since its establishment the Company turned out over 300 ships and more than 2500 locomotives for Germany and abroad, besides numerous lighters, dredges, floating cranes, pontoons, dock gates, stationary engines, turbines and boilers.

Among the constructions for the German mercantile marine, it is especially the express steamers and imperial mail steamers—besides the freight and passenger steamers—which have produced for the "Vulcan" its prominent position in the shipbuilding industry of the world. World famed among these masterpieces of naval engineering are the express steamers "Kaiser Wilhelm der Grosse," "Kronprinz Wilhelm," "Kaiser Wilhelm II" "Kronprinzessin Cecile," and the twin-screw freight and passenger steamer "George Washington" (the largest of the German mercantile fleet, displacement 35,850 tons) all built for the Norddeutscher Lloyd, of Bremen. The "George Washington" represents quite a new type of steamer. Typical among the ships built for the Hamburg-American Line are the express steamer "Deutschland," the "Kaiserin Auguste Victoria" and the turbine steamer "Kaiser."

The achievements of the "Vulcan" in the construction of men-of-war have met with the entire approval of the German Emperor and the Naval Office. The company built for the German Navy.

9 battleships, among them H.M.S. "Mecklenburg," "Preussen," "Pommern" and "Rheinland."

5 protected cruisers.

6 second class cruisers, among them the "Hamburg," the "Lubeck," the "Stettin" and the "Mainz."

The latter three are fitted with turbines. Besides these vessels the "Vulcan" turned out a number of special type ships, among them H. M. Yacht "Hohenzollern."

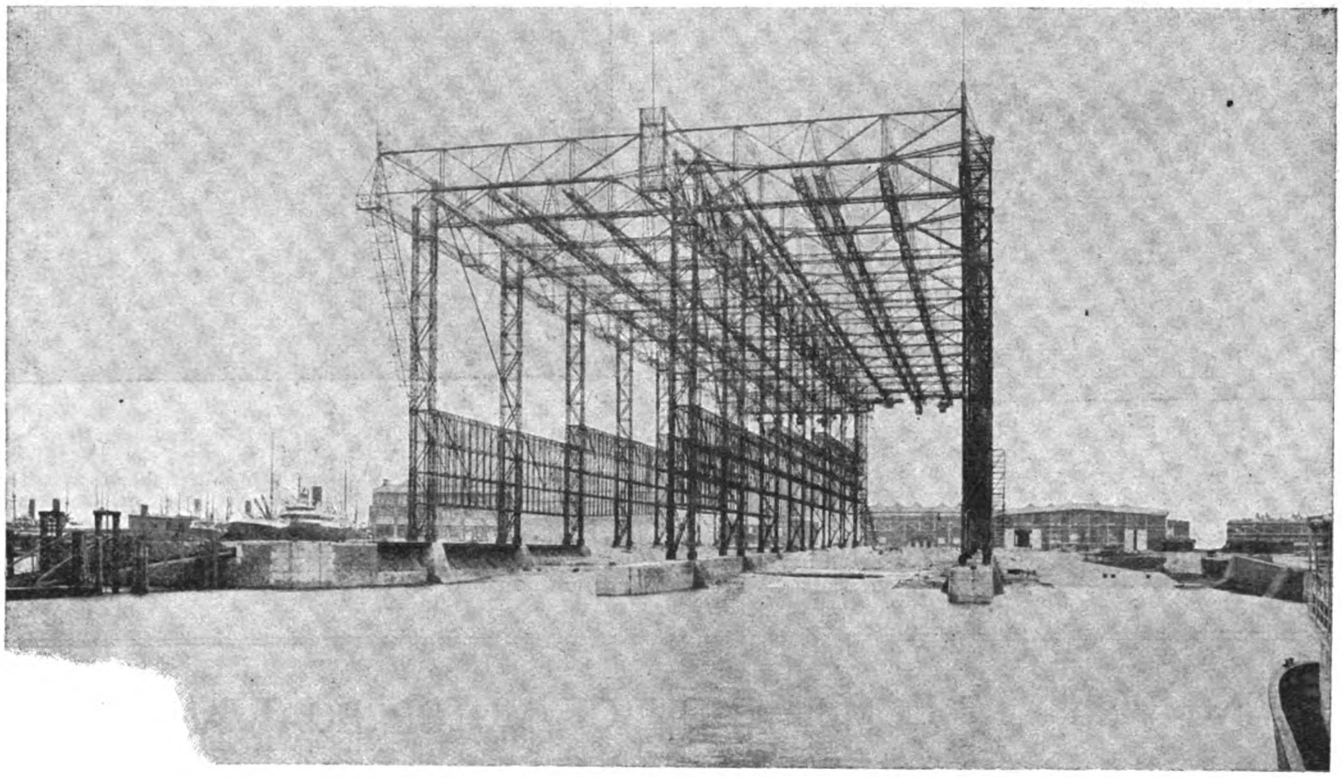
Very successful was of late another branch of the Company's works, viz: the torpedo boat yard, where more than 25 torpedo boats—all fitted with A.E.G. turbines—were built for the German Navy. Of these, "V. 164" made the highest speed record hitherto attained, viz: 34.5 knots. But these home orders were not the only ones; the "Vulcan" true to its motto: "My field is the wide world," secured orders also from foreign navies and built numerous men-of-war of various types—from the heavy battleships to the swift, graceful torpedo boats—for Russia, Greece, Japan, China, Brazil, and Uruguay.

In due consideration of the progress made with the turbine system the "Vulcan" gave special attention to its construction, and the results obtained with turbines for the Navy and the mercantile marine are truly remarkable.

The launching conditions on the river Oder and the Baltic coast not being favourable for very large ships, the "Vulcan" company decided to establish a branch shipyard on the North Sea. After many preliminaries Hamburg was decided upon, as the conditions there were the most favorable as regards launching space and building sites. Negotiations with the Senate of Hamburg made it apparent that the authorities at Hamburg themselves expected a considerable profit from the opening of a branch shipyard of a company whose reputation was well established all over the world, and as the Hamburg Burghership was of like opinion, the contract was readily concluded.

The work of laying out and building the shipyard and the offices was undertaken with all possible speed, so that within less than three years the whole concern—the towering frameworks of the building slips of which are a typical feature of Hamburg Harbour—was completed and ready for operation.

On entering the main gate of the shipyard—which covers an area of 232,000 square metres and is intersected by normal gauge railway tracks—the visitor passes through the angle-bar and frame forge, the riggers' and carpenters' shops, the joiners' shops and the saw mill to the four gigantic building slips, all fitted with cranes, where ships of up to 1000 feet width can be constructed. From the building slips one passes through a workshop of 8,250 sq. metres floor space, containing the furnaces and the drawing loft, to the shipbuilding shop, the platestacks, covering an area of 10,000 sq. metres and fitted with a huge iron scaffolding on which run cranes, by which the material arriving by railway is rapidly conveyed to the adjoining workshops.



SHIPBUILDING SLIPS, VULCAN SHIPYARD

At the boiler forge and the copper smithy, as well as at the hammer forge, the painters' shop and the rivet store, in the engine workshops as well as at the electric central power station, everything is arranged according to the very latest methods. Especially up-to-date is the vast new hall for the construction of high power turbines, with adjoining power station, where the turbine plant for the battleship "Ersatz Heindall" is under construction. All workshops are fitted with electric travelling cranes and with all those appliances that ingenious engineers have devised for rational and cheap working.

The floating docks, immediately adjoining the shipyard, are fitted with perfectly independent power stations and are able to lift ships weighing up to 11,000 tons. The docks, too, are equipped with the most up-to-date mechanical appliances.

With a view to rapid and safe working, floating cranes and, on the quays, travelling tower cranes are available.

It is desirable that the Vulcan branch works at Hamburg should develop as favorably as the mother works at Stettin, and the

Company considered it a good omen that H. M. the German Emperor on the occasion of the opening of the new shipyard on June 21st, 1909, sent the following message to the president of the board of trustees:—

"On returning from an inspection of "the new Vulcan Yard, which magnifi- "cent and model establishment has given "me great pleasure, I express to you "and the Vulcan Company my most cor- "dial congratulation upon the brilliant "success of the enterprise. I doubt not "that the new shipyard will justify the "good reputation of the Stettin Vulcan's "capability by further remarkable con- "structions, and propagate it in the in- "terest of German shipbuilding and to the "satisfaction of your well-disposed

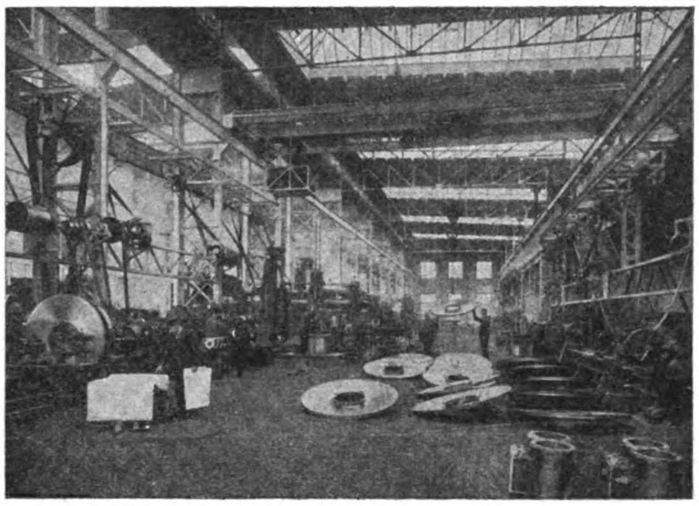
Wilhelm I. R."

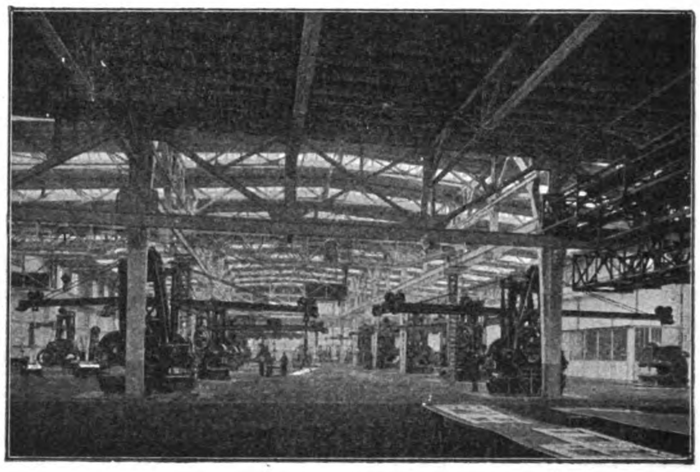
The beginning is made. The ships at the quays and in the docks promise a good progress of the repairing business.

Amidst a veritable forest of scaffoldings the outlines of the battleship "Heimdall," an order from the German Imperial Navy, are already recognizable, whilst on the largest of the building slips the keel is being laid for a leviathan freight and passenger turbine steamer, the construction of which puts the capability of the young enterprise to a severe test, while at the same time it is a proof of the confidence placed in the ability of the shipyard.

Meanwhile the construction of the great dock, built by the company itself, is making good progress.

The number of workmen is expected soon to exceed 3000, and more hands will be required. In consideration of this, a company has been established for the purpose of building healthy cottages for the workmen at the neighbouring village of Neuhof, so that the men employed at the "Vulcan" yard will have comfortable homesteads in close proximity to their place of work.





"THE FLYING FISH". A COMBINATION OF MOTOR BOAT AND AEROPLANE

About six months ago the idea was conceived in the shop of the Michigan Steel Boat Company, 1250-1500 Jefferson Ave., Detroit, Mich., of building a combined motor boat and aeroplane. In the beginning very little was thought of the idea and nobody ever dreamed of this craft becoming a commercial success, but so practical does the invention appear that A. A. Schantz, President of the D. & C. Aerial Navigation Company, has given a tentative order for six of them to be used in service between Detroit, Cleveland, and Buffalo.

"The Flying Fish" is the practical use of the flying machine. Some few weeks ago the first working model was taken out on the River above Belle Isle and skimmed over the ice scarcely touching it at a speed of sixty-five miles an hour. This was with a less powerful engine than that which the second "Flying Fish" is equipped and which was recently exhibited at the National Motor Boat Show in Madison Square Garden, New York City.

The hull of the "Flying Fish" is a water tight steel and aluminum tank 5'7" wide, 7'2" long and 2' deep. The bow end is slanted but all other angles are 90 degrees. In this is set an 8 cylinder aeroplane engine, the only 8 cylinder aeroplane engine in the world. It is a model of compactness but belying its size, it eats up gasoline at a great rate and whirls the propeller at terrific speed.

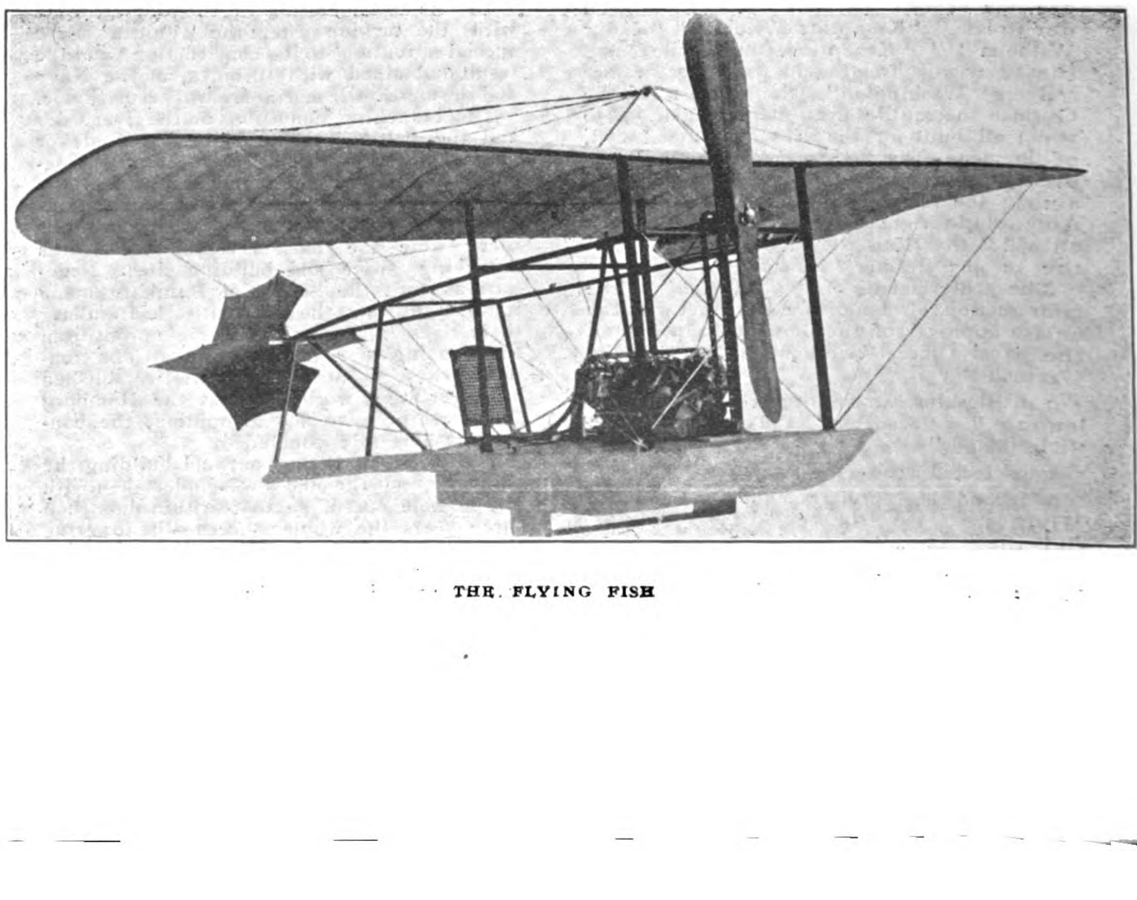
Above the hull is a single plane 26 feet from tip to tip and 6½ feet wide. The frame is covered with oil soaked canvas, khaki in color. It is convex.

Extending behind the hull for the world like the handles of a baby buggy, except that the arms are steel and the wooden cross piece is a foot wide, is the tail, and this flat board 5'7" long, a foot wide and one-half inch thick, about 10 feet behind the hull, the craft is expected to fly, that is, when the boat attains sufficient speed forward, the plane is expected to lift the hull out of the water entirely, only the "tail feathers" touching the surface. As the speed increases it is believed that the "Flying Fish" will rise from the water entirely and leap over the top of the waves, the "tail feathers" touching at intervals and steadying the mad flight.

Also extending behind the hull is the rudder, a regular aeroplane rudder but smaller. It is fourvaned, the blade being covered with canvas.

At the foot of the hull is the propeller, a double blade of wood over 6 feet from tip to tip.

In the rear of the hull is the cock pit into which the feet of the skipper extend as he sits on the caned back chair. Immediately in front of him are the two levers, one controls the rudder, the other warps the single plane which combats the air currents.



THE FLYING FISH

STEEL WIRE CONCRETE REINFORCEMENT

The Broadening Uses of Woven Fabric in Various Forms of Granolithic Construction

Starting from the coincidental receipt of unusually heavy orders for fencing wire from two widely separated sections of the country, which upon investigation disclosed a new use of the material, there has grown in recent years the wide use of woven wire fabric in reinforcing concrete construction, says the *Iron Trade Review*. This branch of the wire business is now extending broadly in different directions and some very interesting applications are now being made with very satisfactory results.

THE BEGINNING OF AN INDUSTRY

The credit for the use of woven wire fabric as a reinforcement belongs to a number of widely separated contractors. As early as 1904 the American Steel & Wire Co., which is now producing the triangle mesh reinforcement, received its first intimation that its "Ellwood" fencing was not only being used for fence purposes, but was also being bought by contractors to reinforce concrete. Comparatively large sales made in western New York and southern California attracted attention and developed, upon investigation, a broader use of their product than the manufacturers themselves had at that time anticipated. For a number of years prior to this time, the fence had been upon the market as one of its standard products. The Ellwood fence machines were the inventions of the late Isaac L. Ellwood and the material was manufactured by him and his immediate successor, the American Steel & Wire Co., of Illinois, until its manufacture reached a large tonnage. Among the companies later amalgamated with the American Steel & Wire Co. was the Consolidated Steel & Wire Co., which controlled the sale of what is known as the "American" fence, a square mesh fabric. When the possibilities of the Ellwood fence, or the diamond mesh fabric, for concrete purposes was grasped, means for improving the product for reinforcement were immediately sought.

IMPROVING THE DESIGN

It was found that the objections to the use of fence fabric for reinforcing concrete were two fold. In the first place, woven wire fencing designed for farm usage in the enclosing of live stock is ordinarily manufactured with close meshes at the bottom and the spaces are gradually increased towards the top. This was manifestly wrong for concrete construction, as to insure a perfect distribution of the strain the tension members must be uniformly spaced and must be of absolutely uniform strength, while in fencing the regular grade of market wire serves the purpose admirably.

After considerable experiment, F. H. Daniels, chief engineer of the American Steel & Wire Co., effected an improvement on the Ellwood fence machines, which would enable them to make a generally acceptable reinforcement fabric, and which was put on the market by the American Steel & Wire Co., in the spring of 1907 and is now recognized as a standard building material.

The triangle mesh steel woven wire reinforcement is made with both single and stranded longitudinal or tension members. Both kinds are illustrated in Figs. 1 and 2. That with the single wire longitudinal is made with one wire varying in size from a No. 12 gage up to and including a one-half inch diameter and that with the stranded longitudinal is composed of two or three wires varying from No. 12 gage up to and including No. 4 wires stranded or twisted together with a long lay. These longitudinals, either single or stranded, are invariably spaced 4 inch centers, the sizes being varied in order to obtain the desired cross sectional area of steel per foot of width. The transverse or diagonal cross wires are woven between the longitudinals so as to form triangles, thereby lending additional carrying strength to the longitudinal or tension members and positively spacing them to provide a more perfect distribution of the steel. These diagonal or transverse wires are woven either 2 or 4 inches apart. A hinge joint is provided on each longitudinal which enables this reinforcement to be folded longitudinally in any desired shape, making it adaptable to all kinds of concrete construction. Its design provides a perfect mechanical bond between the steel and the concrete and since it is not galvanized unless so ordered, the maximum adhesive bond is developed. A sufficient area of section is provided in the cross wires to prevent temperature cracks, thereby eliminating the necessity of laying additional reinforcement at right angles to the longitudinal or tension members.

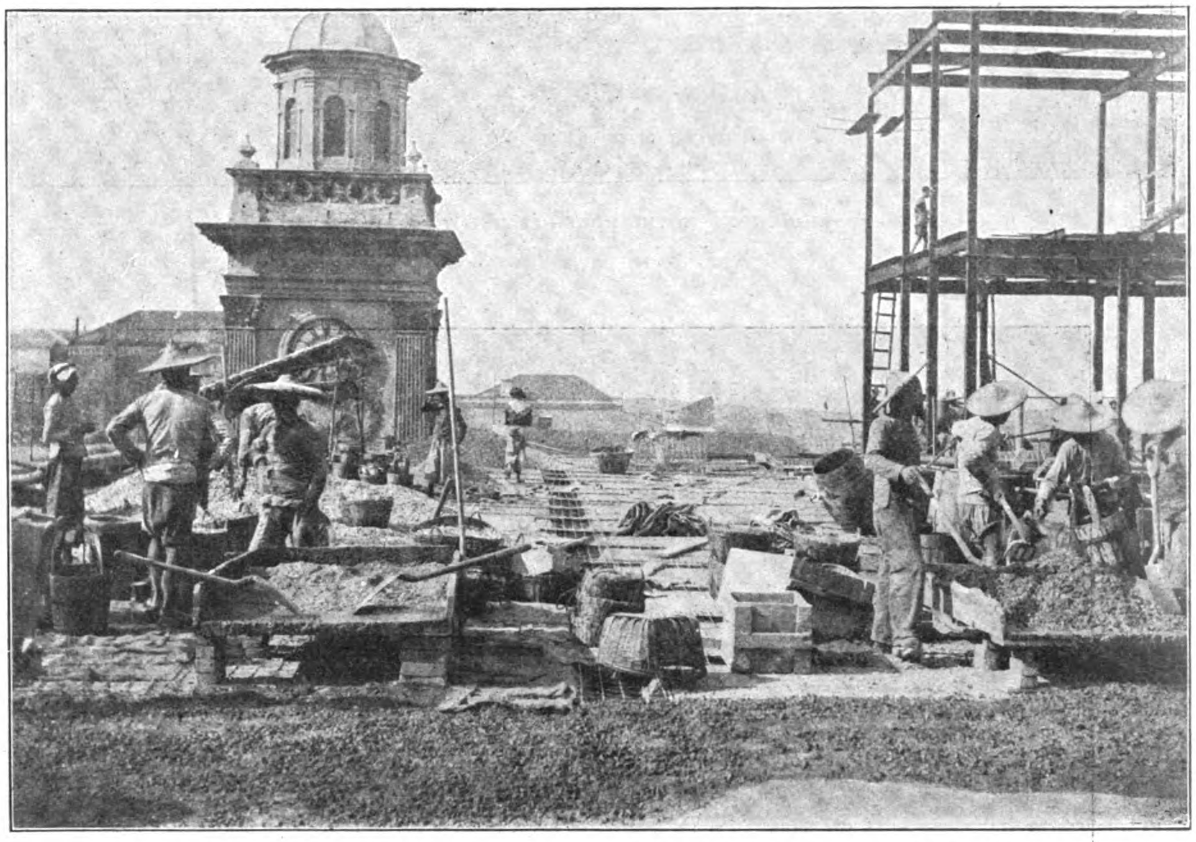


FIG I—LAYING TRIANGLE MESH REINFORCEMENT, HONGKONG HOTEL ROOF

THE FLYING FISH.—Continued

The weight of this craft is 750 pounds.

Both for sport and business purposes the new air boat is expected to be at once popular. With its great speed it will surpass any boat that is forced to depend entirely on the water for sustaining the hull.

There is less danger of it tipping than in any ordinary boat for the plane will act as a preventive. In our boat the passenger will have all the sensations of flying, the rush of speed through the air and there will be something more substantial than air beneath should anything go wrong. The air is a pretty thin cushion to land on. Even should the boat be entirely out of the water and the engine failed, there would be merely a drop of a few feet in a nonsinkable, perfectly balanced and safe hull.

"The Flying Fish" is not expected to fly at any length or height, except as a rush of air catches the plane and lifts her up 8 or 10 feet for a short distance. The tail piece will be always in the water sustaining her in steady flight. The tail piece will offer no resistance to the rudder. There will be nothing else to offer any resistance, except the insignificant front surface of the craft, so what is there to prevent great speed? With the first machine we made 65 miles an hour over the ice. The tail piece skimmed the ice every fifteen feet or so. There was no jar as we touched the surface, the sailing was perfectly smooth.

We believe the "Flying Fish" can be launched in ordinarily smooth water and while in flight will not be bothered by heavy waves. Aeroplanes nowadays fly in heavy winds and we believe "The Flying Fish" and her successors can do at least as well.

The present model is small with only accommodations for one person, but with a little larger craft passengers can be accommodated.

A. A. Schantz, who has worked out a plan for a system of dispatch boats between Cleveland, Buffalo, and Detroit, is enthusiastic over the aerial motor boat. It was his original plan to have a fleet of six airships for emergency service between the three cities and possibly with the bigger boats of the D. & C. fleet, the airships to be capable of carrying one or more passengers, but the new style motor boat has all the qualifications of speed and adaptability and he believes a far greater element of stability. People who would fear to use the aeroplane in its present undeveloped state would trust themselves to the aerial motor boat he believes.

However, the aeroplane companies will be given every chance to make good in competition with the air-water craft.

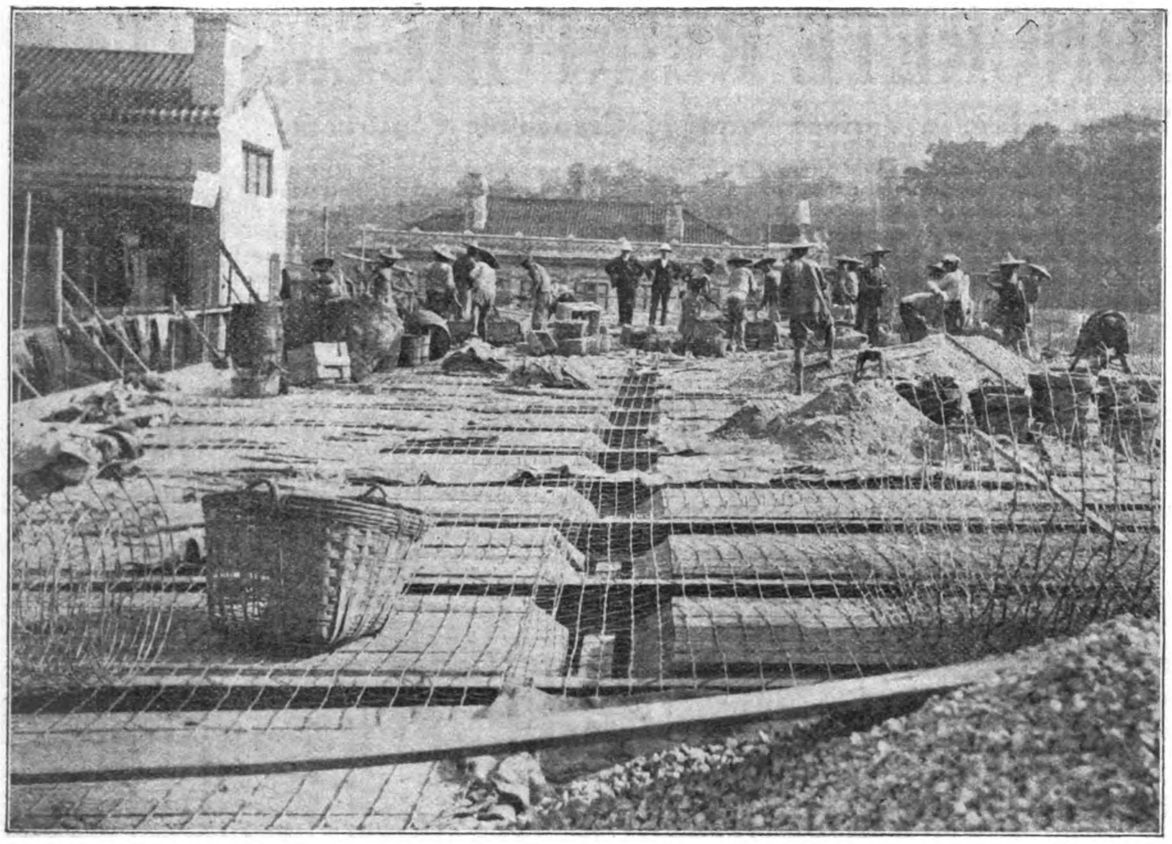


FIG. 2—HONGKONG HOTEL ROOF—LAYING TRIANGLE MESH

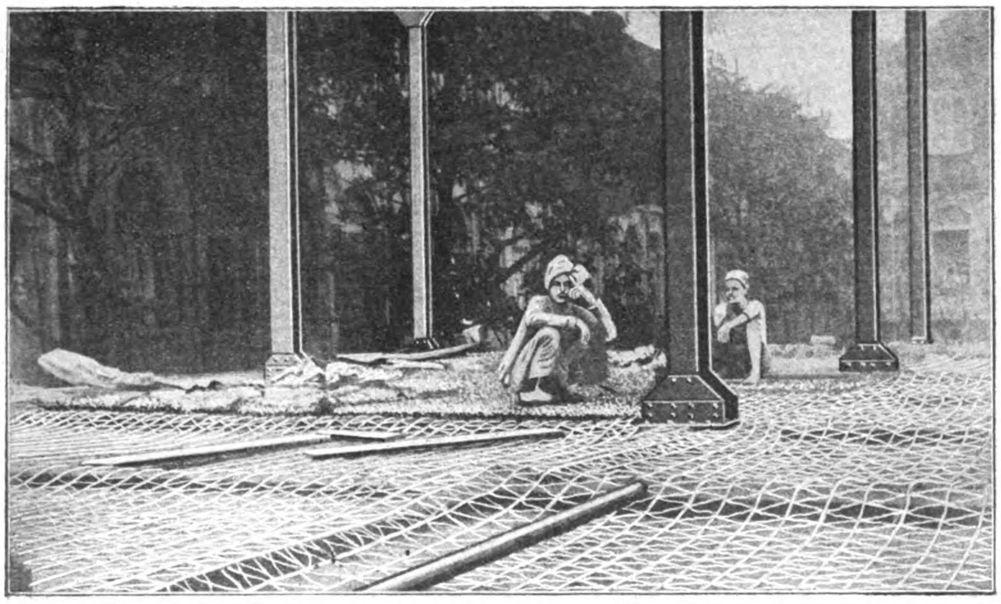


FIG. 3—VIEW OF PORTION OF FIRST FLOOR OF MESSRS. WATSON & SONS' PREMISES, RANGOON.—TRIANGLE MESH No. 33 WITH CONCRETE PARTLY FILLED IN.—SPANS 7 FOOT—CONCRETE 5".

DIVERSITY OF APPLICATIONS

While its original use was presumed to be limited to reinforcing concrete floors, it has been found to be also well adapted to other uses. One of the principal applications is that of reinforced concrete pipe. Under the Meriwether system of manufacture, this pipe is built above ground and later lowered in the trench. The molds used, as seen in Figs. 3 and 4, consist of cast iron bottom rings and inner and outer truly cylindrical and concentric casings of sheet steel. The reinforcing metal is centered in the mold rather closer to the interior circumference of the section, thus insuring the proper location in the tension of the crown and invert. Each section is made with a bell and a spigot end. The reinforcing fabric extends the length of the section and projects both into the bell end and out of the spigot end for several inches. The spigot is shorter than the bell so that when two sections of the pipe are placed together the reinforcing metal from one section overlaps the reinforcement of the other section in an internal recess. The recess in this joint is filled with cement mortar, thus locking the sections together and sealing the joint at one operation. On all pipe of 36 inches in diameter or larger, the joints are made from the interior after the back filling has been placed by forcing the grout behind a shield.

On sizes less than 36 inches in diameter, the joints are made from the outside through openings in the crown portion of the bells before the black filling is placed. Pipe under the Meriwether system is manufactured in sizes ranging from 24 to 96 inches diameter and in 3 and 4-foot lengths. Under test it has revealed surprising strength, showing a test recently made at Wichita, Kas., on a 42-inch section in which a load of 37,700 pounds was applied. A most interesting recent service to which reinforced concrete pipe has been put is sub-aqueous work. The pipe has been used with much success in the building of sewer outlets, water works intakes, etc. For this purpose the short sections are usually jointed above ground into lengths of 20 feet with cast iron flanges molded into each end. These lengths are then lowered into place and the flanges bolted together by divers. The Lock Joint Pipe Co., 165 Broadway, New York City, is now furnishing 40 miles of this pipe for the sanitary and storm system of sewerage in Havana, Cuba. This pipe ranges in diameter from 36 to 84 inches and is said to be the largest contract for reinforced pipe ever awarded. The contract will require the use of 1860 tons of steel wire reinforcement.

The use of wire fabric as reinforcement in road construction is another field of usefulness which has been opened to this material. The Vanderbilt automobile cup course on Long Island contains over 1,500,000 square feet of this mesh on the reinforced concrete roadway. A layer of 1 inch of crushed stone was placed upon the roadbed and upon this was laid the wire reinforcement, which in turn was covered by 4 inches of crushed stone. The roadway was then rolled with a 60 ton steam roller, and stone and cement grout in liquid form was distributed over the entire area until the mixture remained liquid on the surface, the result being a reinforced concrete slab without a break, 28 feet wide and 6 miles long. The reinforcement is essential because of the possibility of the grade settling over small areas, which would, without this steel fabric cause a depression in the roadway. The material which was furnished for this purpose is the triangle mesh reinforcement, style No. 8, galvanized.

Another use that has been found for this fabricated material is in the reinforcement of concrete piles. By reason of the hinge joint formation of this type of fabric, it is believed that this application is destined to be considerably extended. A very large percentage of the fireproof buildings in Greater New York during the past year has used the steel wire mesh reinforcing material in the construction of floors and roofs. Over 1,000,000 square feet alone have been placed in the new Grand Central terminal improvements of the New York Central railroad. Among other important new buildings in the metropolis in which this fabric has been used are Kent Hall, Columbia University, Stern Brothers department store, Bronx theater, Sinclair building, and numerous other loft, office and apartment structures.

Triangle Mesh Steel Woven Wire Reinforcement is made with both single and stranded longitudinal, or tension members. That with the single wire longitudinal is made with one wire varying in size from a No. 12 gauge up to and including a ½-inch diameter, and that with the stranded longitudinal is composed of two or three wires varying from No. 12 gauge up to and including No. 4 wires stranded or twisted together with a long lay. These longitudinals, either solid or stranded, are invariably spaced 4-inch centers, the sizes being varied in order to obtain the desired cross sectional area of steel per foot of width.

The transverse or diagonal cross wires are so woven between the longitudinals that perfect triangles are formed by their arrangement, thereby not only lending additional carrying strength to the longitudinal or tension members, but positively spacing them and providing a most perfect distribution of

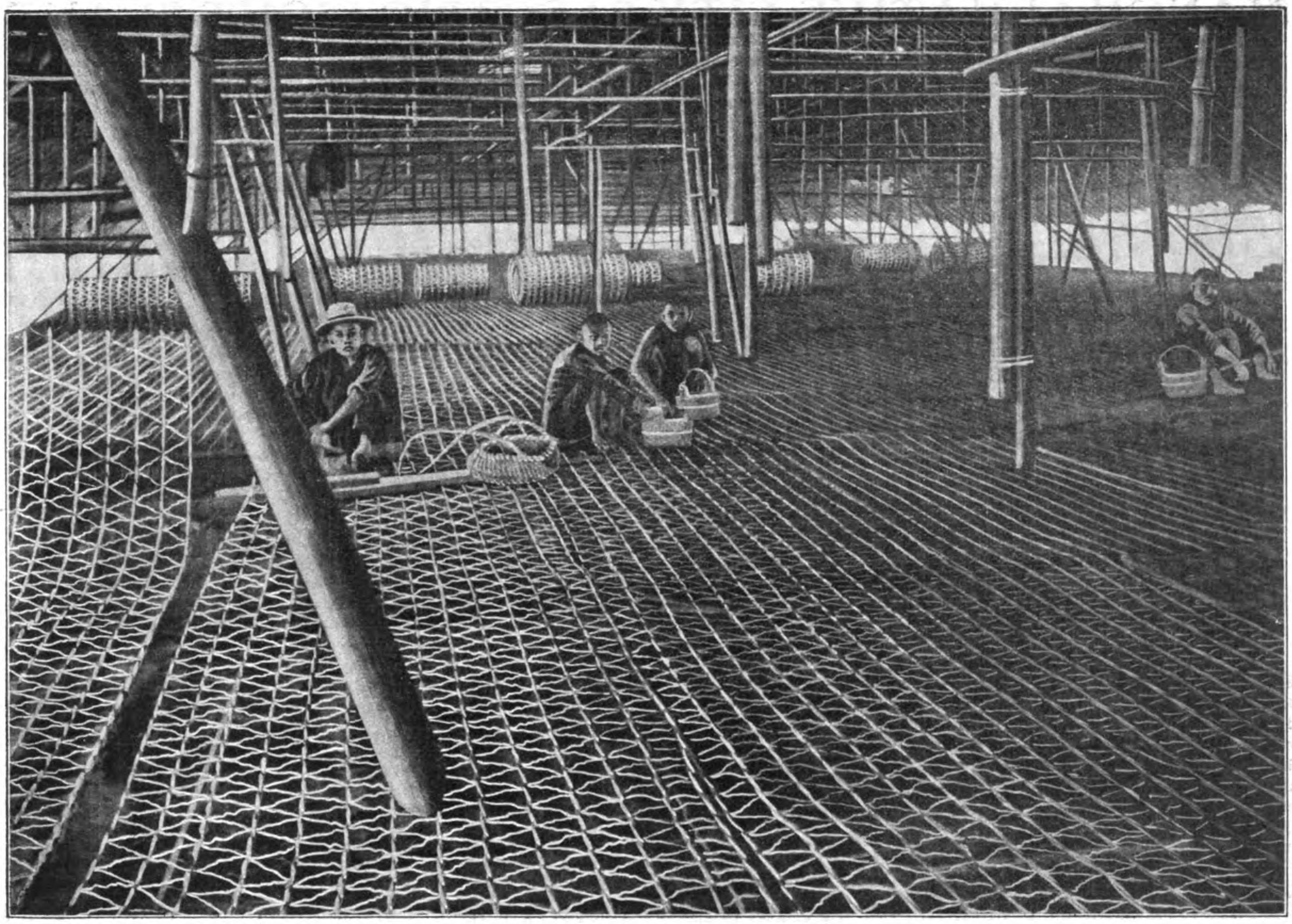


FIG 4—NEW OUT DOOR CUSTOMS BUILDING, HONAM, CANTON.—TRIANGLE MESH NO. 9.—MESSRS. PURNELL AND PAGET, ARCHITECTS

the steel. These diagonal cross or transverse wires are woven either 2 or 4 inches apart, as is desired. It is the most perfect reinforcement for concentrated loads, distributing the stress imposed by the load throughout the floor slab. A hinge joint is provided on each longitudinal, which enables this reinforcement to be folded longitudinally in any desired shape, making it adaptable to all kinds of concrete construction. Its design provides a most perfect mechanical bond between the steel and the concrete, and from the fact that it is not galvanized (unless specifically ordered) the maximum adhesive bond is developed.

A sufficient area of steel is provided in the cross wires of Triangle Mesh Reinforcement to prevent temperature cracks, thereby eliminating the necessity of laying additional reinforcement at right angles to the longitudinal or tension members.

By the use of Tables 1 to 12, inclusive, giving the resisting moments of reinforced concrete slabs, suitable fabric may be selected to use either with or without bars for all kinds of loads and spans and conditions met with in the construction of buildings, bridges and reinforced concrete in general. In these tables we h ve assumed different allowable stresses in the steel, namely, 16,000, 18,000, and 20,000 pounds per square inch, depending on its elastic limit, and different proportions of cement, sand and stone in the concrete. We, however, recommend in general using a 1:2:4 mixture for floors or other structures subjected to high stresses.

While we recommend the use of a fabric made with a mild steel we can furnish it in any grade of steel desired.

Triangle Mesh Woven Wire Reinforcement for Concrete is made with either solid or stranded longitudinal members, properly spaced by means of diagonal or cross wires so arranged as to form a series of triangles between the longitudinal or tension members; the longitudinal members being invariably spaced 4 inches apart, the cross wires either 2 inches or 4 inches apart, as desired, providing either a 2-inch or 4-inch mesh. The sizes of both longitudinals and cross wires are varied in order to provide the cross sectional areas of steel required to meet the conditions.

Triangle Mesh Reinforcement, we believe, is the most efficient material on the market for the purpose:

It provides a more even distribution of the steel, reinforcing in every direction.

Tension or carrying members accurately spaced.

A most perfect mechanical bond.

When a specific size of fabric or area of steel is specified it is impossible to leave out any portion of the reinforcement.

Minimum cost of installation.

Easily handled and stored on the work.

Low cost of inspection.

An absolutely continuous action from one end of the structure to the other.

Higher elastic limits with the same quality of steel, due to cold drawing.

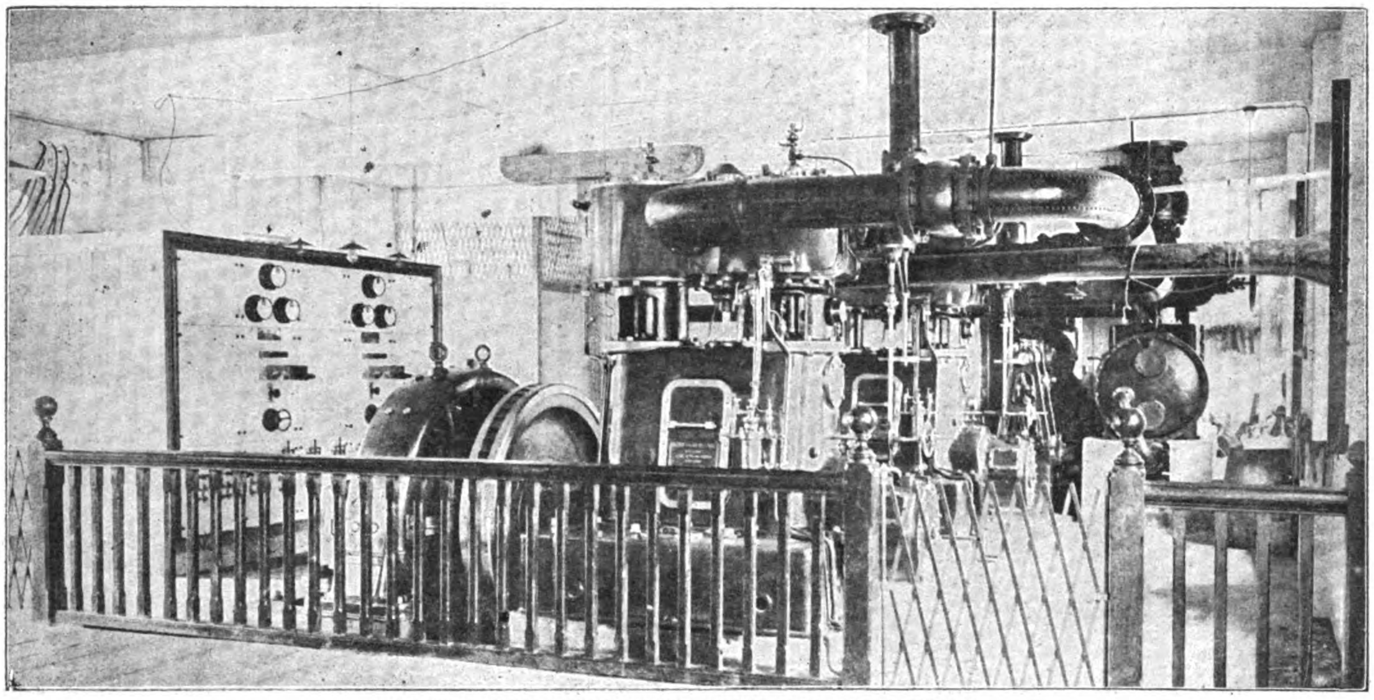
Distributes the stresses due to a concentrated load over a greater area.

Triangle Mesh Reinforcement is the only design of woven wire fabric in which the cross or diagonal wires assist the longitudinal or tension members in carrying the load.

While reinforcing fabrics are made both galvanized and not galvanized, we strongly recommend the latter, due to the fact that a much better adhesive bond is provided and also greater strengths. In the case of a galvanized wire the adhesion between the reinforcement and the concrete is to the coating on the steel and not to the steel itself, and also in the galvanizing process the steel is annealed or softened, thereby reducing its elastic limit and ultimate strength.

It is a well-known fact that steel thoroughly imbedded in a proper mixture of concrete does not rust, and in the case of a smooth round rod used as reinforcement it is more desirable to have a thin surface coat of rust, than if it were perfectly bright and smooth, provided the rust has not penetrated sufficiently far to pit the steel and produce a scale. This slight coating of rust provides a rougher surface and therefore a better bond.

SHANGHAI NATIVE CITY ELECTRIC LIGHT PLANT



GENERAL VIEW GENERATING ROOM AND SWITCHBOARD

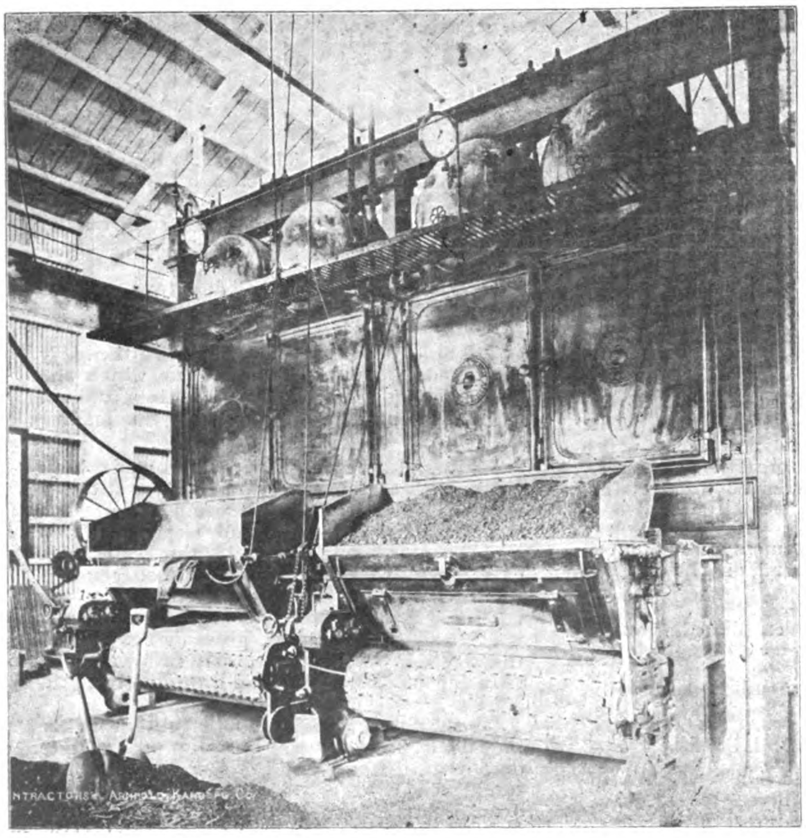
The second electric plant for lighting the Native City of Shanghai was recently erected and placed in operation. One was already at work inside the walled town, but the new plant is located in the Compound of the Native City Waterworks near the Chinese Bund and the Kiangnan Arsenal. The contract was carried out by the Electrical Department of the well known firm of Arnhold Karberg & Co., under the direction of their Chief Electrical Engineer, Mr. L. Junginger.

The equipment of the plant consists of 2 Babcock and Wilcox double drum type patent water tube boilers of 3140 sq. heat of heating surface each, capable of evaporating 20,000 lbs. of water per hour working at a pressure of 160 lbs. per sq. inch. Babcock & Wilcox mechanical chain grate stokers, of 59 sq. ft. grate area each, are used, and arranged for electric motor drive.

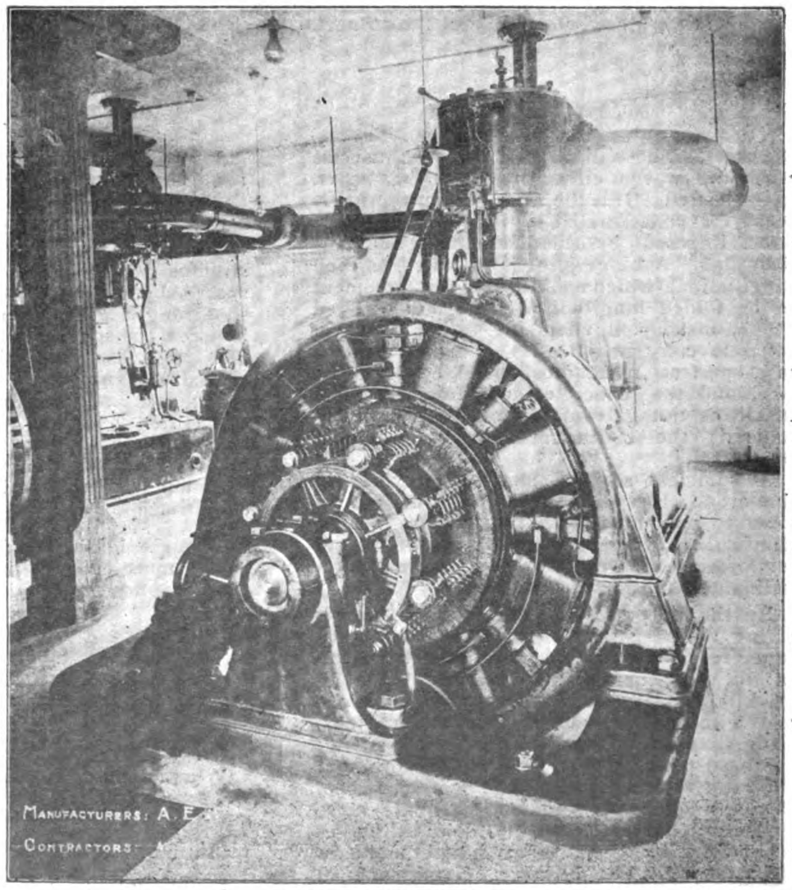
The motive power is furnished by 2 Bellis & Morcom patent 2 Crank, Compound, high speed, self lubricating engines; each of 380 B. H. P. at 375 r. p. m. working at a pressure of 160 lbs. per square inch, and running under condensing conditions.

The engines are direct connected to 2 A. E. G. direct current 250 Kilowatt dynamos, generating at 440-500 volts. They are eight pole machines fitted with interpoles. Static balances are used and the armatures fitted with slip ring contacts.

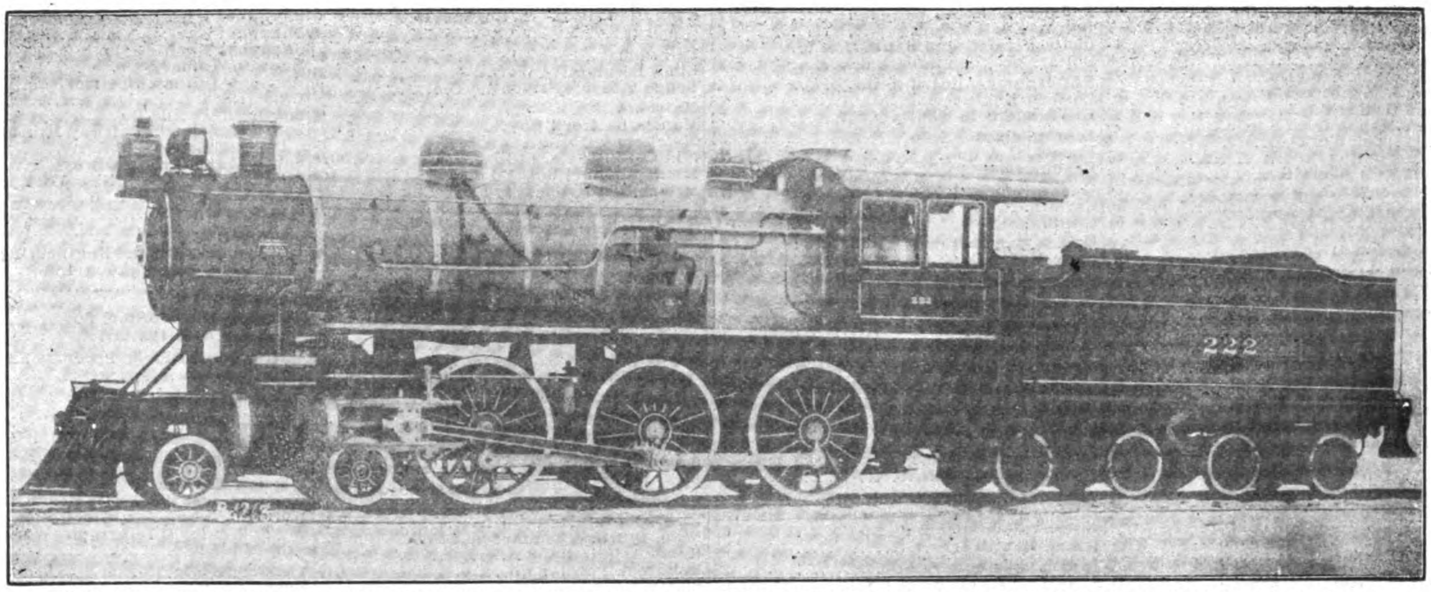
The switchboard is a 5 panel A. E. G. Standard, provided with the usual instruments and devices. The three wire system is used on the street mains, using 440 volts on the outer and 220 volts on the neutral wire, having static balances with a 15 per cent capacity for under or over load. A. E. G. Metalamps are used exclusively in the city and are giving every satisfaction.



BOILER PLANT: BABCOCK AND WILCOX

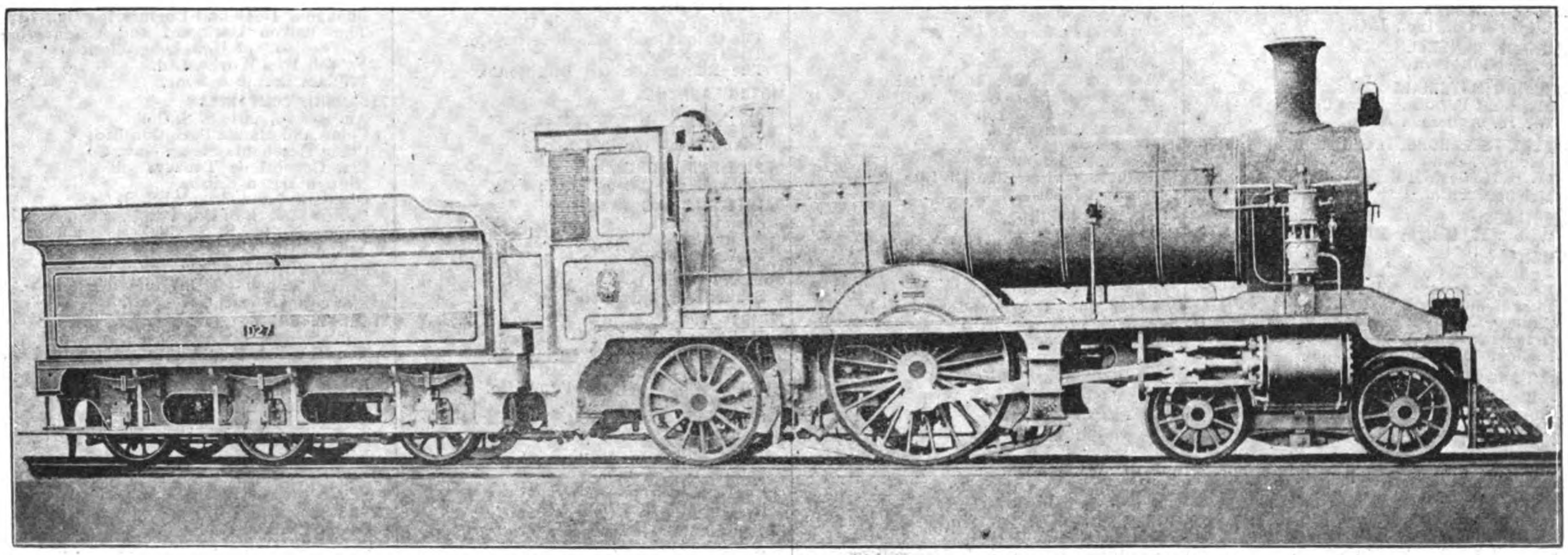


A. E. G. GENERATORS



8-WHEELED TENDER LOCOMOTIVE BUILT FOR THE IMPERIAL GOVERNMENT RAILWAYS OF JAPAN (KOREAN LINES) BY THE AMERICAN LOCOMOTIVE COMPANY OF NEW YORK.

The accompanying illustration is of a locomotive built by the American Locomotive Co. of New York for the Japanese Railway Board for the Korean lines. It was constructed for standard gauge track 4″ 8.5″ and its dimensions and description follow: Cylinders, 20″ dia., 26″ stroke; driving wheel-dia. 66″; boiler, dia. 64″, pressure 180 lbs.; fire box, length 96.125″, width, 60.25″; tubes, number, 310, dia., 2″, length 15′ 2″; wheel base-driving, 13′ 6″, engine 24′ 4″, engine and tender, 49′ 8.5″; weight in working order, leading 31900 lbs., driving, 117200 lbs.; engine, 14900 lbs., tender, 86400 lbs.; fuel, soft coal; heating surface, tubes 24480 sq. ft., fire box, 132 sq. ft.; total 2580 sq., ft.; grate area, 40 sq. ft.; maximum tractive power, 24,100 lbs; factor of adhesion, 4.86; tender, type 8-wheeled; capacity—water 4,000 gals., fuel 7 tons.



LOCOMOTIVES BUILT FOR THE SHANGHAI-NANKING RAILWAY BY KERR, STUART & CO.

The illustration above is of one of four passenger locomotives built for the Shanghai-Nanking Railway by Messrs. Kerr, Stuart & Co., Limited, of London and Stoke-on-Trent. The Consulting Engineers were Messrs. Sir John Wolfe-Barry and A. J. Barry.

As will be seen from the illustration, the engines are of the four two type with six-wheeled tenders. The leading dimensions are given below:—Gauge 4′8½″; Driving Wheels 7′0″ dia., Bogie Wheels 3′6″ dia., Trailing Wheels 4′9″ dia., Total Wheel Base 48′9″, Length over couplers—engine & tender—57′3¾″. Tender capacity—fuel 7 tons, water 3500 gallons; Weight empty—Engine, 50 tons 6 cwts, Tender 19 tons 9 cwts, Weight in working order, Engine 56 tons 1 cwt, Tender 42 tons 13 cwts. Total 98 tons 13 cwts.

The cylinders are 18″ in diameter with a stroke of 26″, and are fitted with bronze "D" slide valves driven by Stephenson link motion.

The boiler is designed for a working pressure of 180 lbs. per square inch, and has an outside diameter at the front of 4′9½″, the telescopic barrel being 12′10½″ in length. The internal fire box is of copper and is fitted with copper stays. Brass tubes to the number of 188 are used in the boiler, these giving a heating surface of 1567.39 square feet. With 182.61 square feet in the fire box, this gives a total heating surface of 1650 square feet.

These engines were wanted urgently, and the order was placed with Messrs. Kerr, Stuart & Co., Ld., on April 12th-1909. Notwithstanding the Whitsuntide Holidays and the period of mourning for the late King, the first two engines were steamed on the 8th and 11th June, a record, we believe, in British Locomotive engineering.

These engines have been in operation for some time on the express service between Shanghai & Nanking, and we understand from experiments conducted by the Locomotive Superintendent, Mr. E. J. Dunstan, M. I. M. E., that this type of engine shows considerable economy in coal consumption.

ALPHABETICAL LIST OF ADVERTISERS

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Alhambra Cigar & Cigarette Factory. 42
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American Locomotive Co. 20
American Bridge Co. 24-25
American Manchurian S. S. Co 70
American Tool Works 4
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Anderson, Meyer & Co 34
Arnhold Karberg & Co 26
Astor House Hotel Co 54

Baldwin Locomotive Works 18
Bazar Siglo XX 7
Banco Español Filipino .... Cover
Bell, David W 23
Berry, Henry & Co., Ltd 1
Bohler Bros & Co. 53
Boulton & Paul Ltd 72
British American Tobacco Co., Ltd. 43

Cadwallader-Gibson Lumber Co 7
Chee Hsin Cement Co., Ltd 50
China Import Export Lumber Co. 71
China Merchants Steam Nav. Co 46
China Mutual Life Insurance Co 51
China and Manila S. S. Co 31
China General Engineering Co 33
Chinese Eng. & Mining Co 64
Cia. General de Tabacos Filipinas. 44
Cia. Trasatlantica 44
Claflin Co., The H. B 42
Clarke, M. A 52
Cook's Sons, Adam 65
Cooper H. R. & Co 74
Cramp., William & Sons 27

Defiance Machine Works 27
Detroit Engine Works 65
Deutsch-Asiatische Bank 1
Dollar, Co., The Robert 47
Easterbrook Allcard & Co 41
Eastern Engineering Co 43
El Varadero de Manila 74
Fearon, Daniel & Co 34
Fressel, C. & Co 15
Fushun Coal 3
General Electric Co 73
Germinal Cigar Factory 43
Gordon & Co 4
Goulds Manufacturing Co 70
Gray Motor Co 33
Green Island Cement Co., Ltd 48
Han-yeh-Ping Iron & Coal Co. Ltd. 68
Hanyang Iron & Steel Works 65
Harvey, Stuart S 75
Henschel & Sohn 36
Herbrand & Co., P 40
Hongkong Rope Mfg. Co., Ltd 31
Hongkong & Shanghai Banking Corporation .... Cover
Hongkong & Whampoa Dock Co., Ltd 10
Honolulu Iron Works Co 17
Hupeh Cement Co 50
Imperial Railways of China. 57-58-59-60-61
International Banking Corp .... Cover
International Steam Pump Co 67
Island Boat Works 33
Jardine, Matheson & Co 29
Johnson-Pickett Rope Co 66
Kawasaki Dockyard Co. Ltd 7
Keystone Driller Co 53

Kiangnan Dock & Engineering Works 8
La Prueba 45
Lima Locomotive Works 21
Lodge & Shipley Machine Tool Co. 31
Malthoid 70
Manila Railroad Co 24-25
Melchers & Co 16
Middleton & Co. Ltd 20
Michigan Steel Boat Co 66
Mitsu Bishi Dockyard & Eng. Works 7
Mitsui Bussan Kaisha 5
Morse & Son, A. J 452
Murray, Wilbur H. Mfg. Co 66
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New York Engineering Co 32
Nippon Yusen Kaisha 47
North British Locomotive Co. Ltd. 19
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Pacific Tank and Pipe Co 76
Paraffine Paint Co 76
Port Banga Lumber Co 15
Priestman Brothers, Ltd 51
Racine, Ackermann & Co 49
Riter-Conley Mf'g Co 10
Rose, Downs & Thompson, Ltd 75
Russo Asiatic Bank 1
Rendrock Powder Co 15
San Miguel Brewery 56
Santa Mesa Rope Works 18
Schuchardt & Schütte, Berlin 41

Shanghai Dock & Eng. Co., Ltd 12
Shanghai Gas Co., Ltd 32
Shanghai Machine Co 30
Shewan, Tomes & Co. 28
Siemens China Electrical Engineering Co 39
Southern Pacific Co 80
South Manchuria Railway Mining Dept 8
South Manchuria Railway 14
Standard Oil Co. of New York 35
Stevenson & Co., Ltd., W. F 7
Strong, Frank L 71
Swift & Co 40
Taikoo Dockyard and Engineering Company of Hongkong, Ltd 9
Thompson, F. H 65
Toyo Kisen Kaisha 37
Trussed Concrete Steel Co 41
Tsingtauer Werft 75
United States Steel Products Export Co 88-63-69-72
Vanderloo & Co., F. A 87
Vulcan Iron Works 66
Vulcan Iron Works Ltd 13
Wen Ming Press 7
White & Co. (Inc.). J. G 6
Western Electric Co 17
Westinghouse Brake Co., Ltd 53
Western Valleys Anthracite Co 76
W. T. Henley's Telegraph Work Co., Ltd 18
Yale Town Mfg. Co 65
Ynchausti & Co 31
Young, C. G 69
Zimmerman Steel Co 61

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(Please mention this journal)

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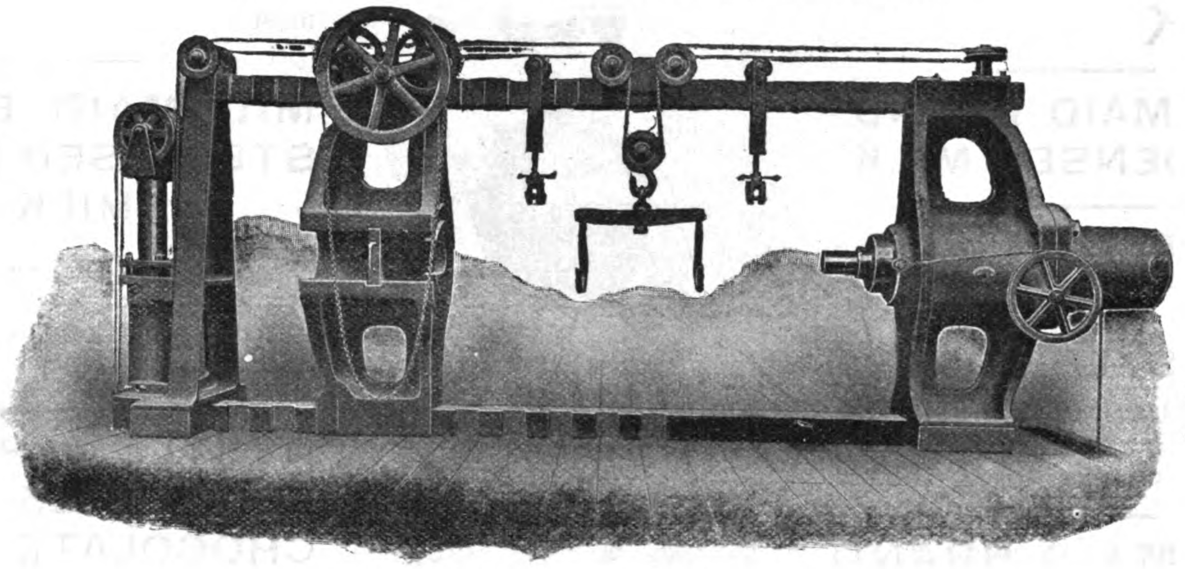

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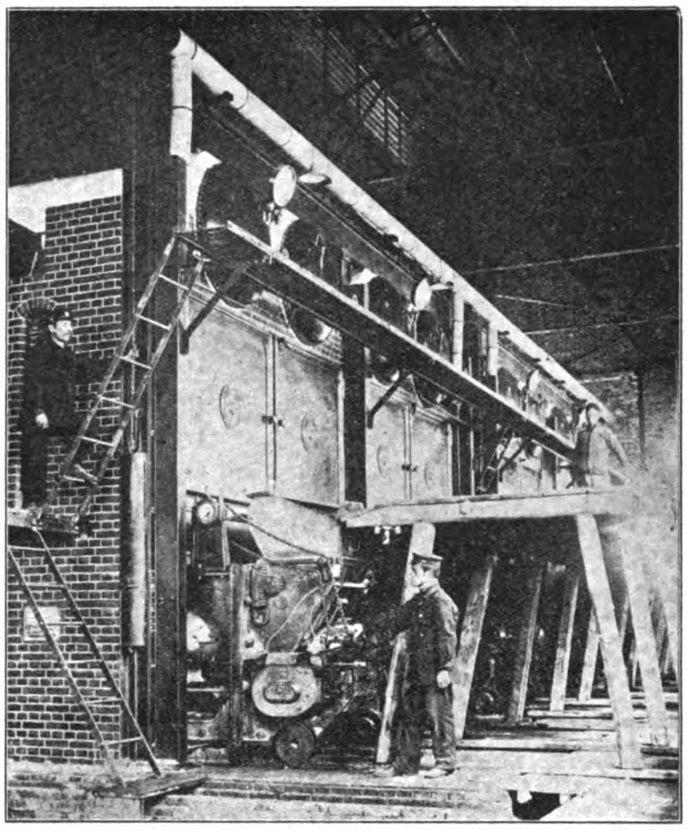

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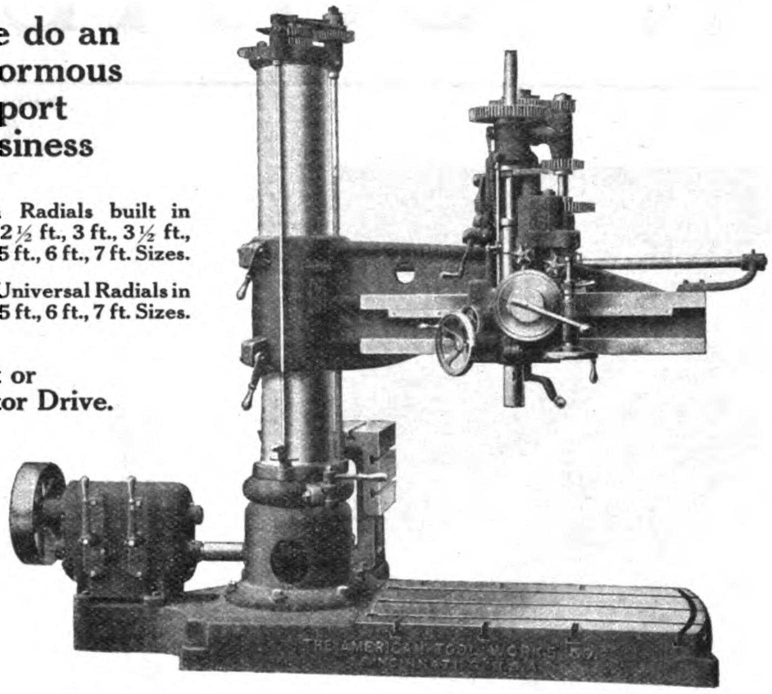

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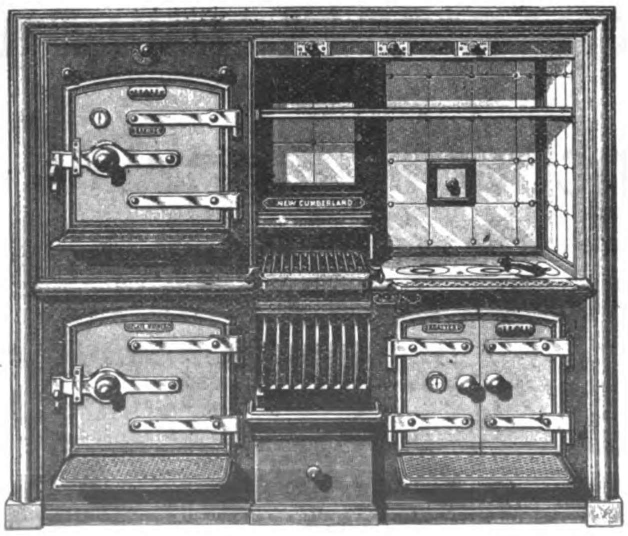

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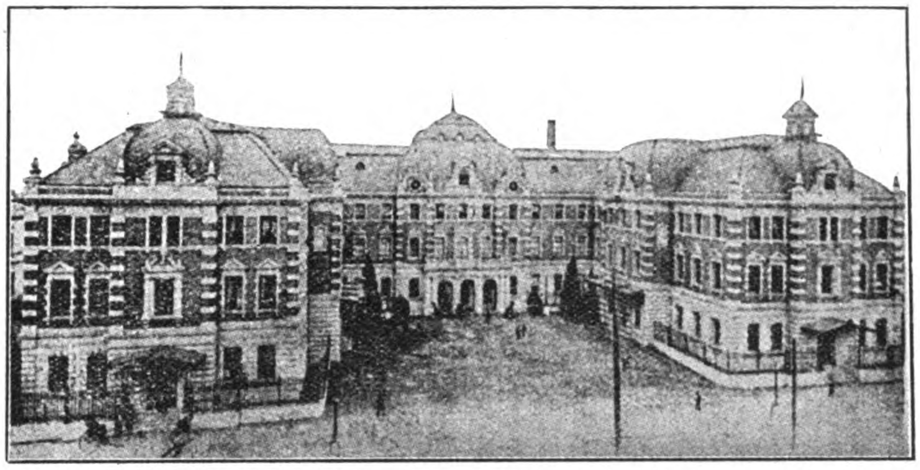

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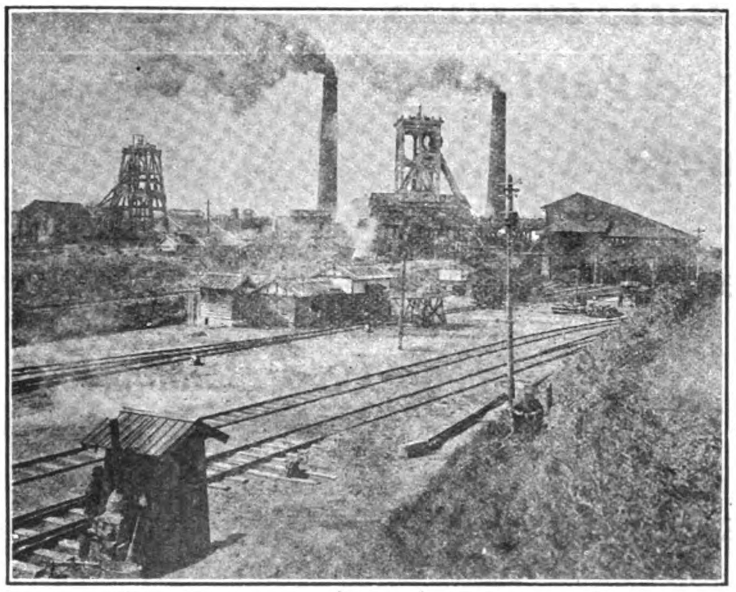

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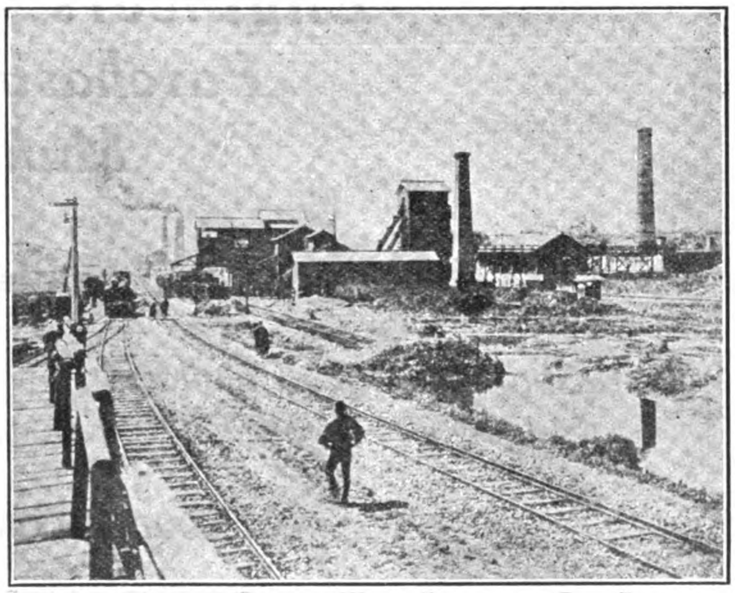

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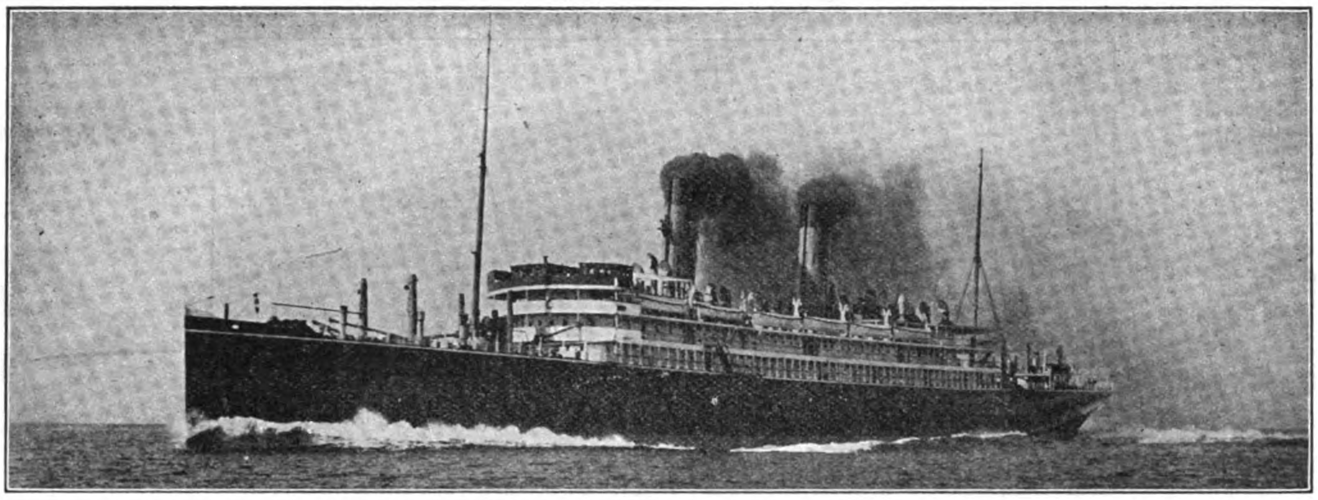

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WIDTH OF ENTRANCE ON TOP . .	88 „	WIDTH OF ENTRANCE ON TOP . .	66 „	WIDTH OF ENTRANCE, TOP . . .	99½ „
„ „ „ „ BOTTOM .	77 „	„ „ „ „ BOTTOM .	53 „	„ „ „ BOTTOM .	88½ „
WATER ON BLOCKS AT SPRING TIDE	26½ „	WATER ON BLOCKS AT SPRING TIDE	22 „	WATER ON BLOCKS AT SPRING TIDE	34½ „

THE BEST EQUIPPED SHIPBUILDING PLANT IN THE FAR EAST,
WITH SPECIAL FACILITIES FOR HANDLING THE HEAVIEST CASTINGS AND THE REPAIRING OR BUILDING OF SHIPS, ENGINES AND BOILERS, ALSO ELECTRICAL WORK.

LARGE STOCK OF MATERIAL, AND FITTINGS ALWAYS ON HAND
THE POWERFUL SALVAGE STEAMER "OURA-MARU" (712 TONS, 700 I. H. P.) EQUIPPED WITH NECESSARY PUMPS AND GEAR, IS ALWAYS READY AT SHORT NOTICE.

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UPPER BURMA

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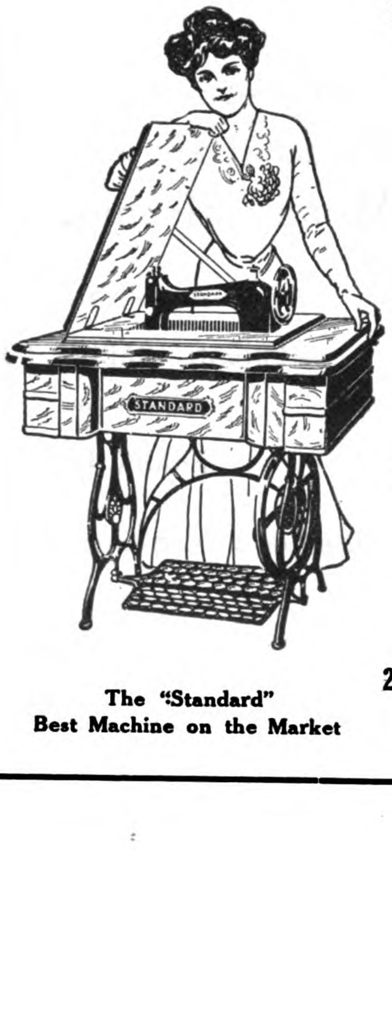
(20th CENTURY BAZAAR)



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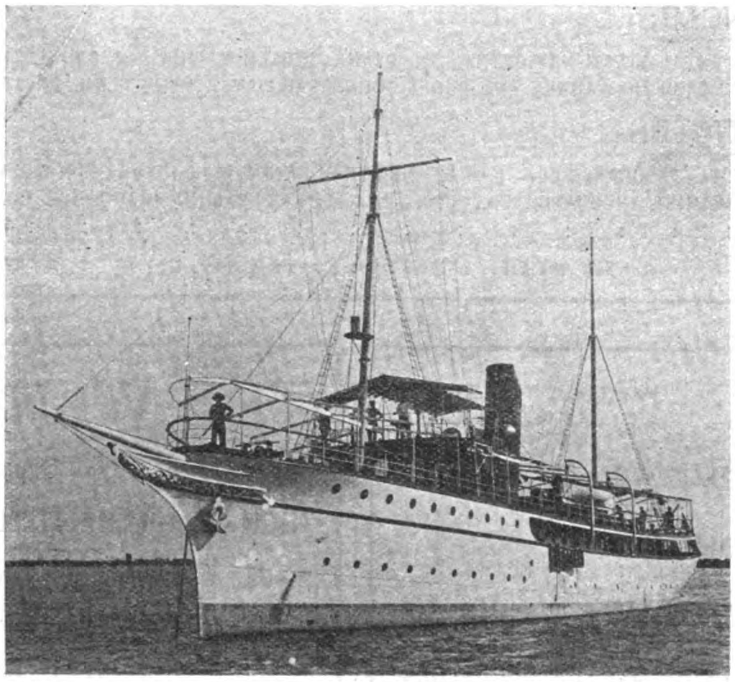

Yacht of H. I. H. Prince Hsui, Built by the Kiangnan Dock & Engineering Works.

KIANGNAN DOCK

Length over all, 385′; length on blocks, 575′; water on sill, 19′; dock entrance, top 70′, bottom, 60′.

The dock accommodates the largest coasting steamers and is equipped with complete modern facilities for handling work thoroughly and promptly.

The new machine and boiler shops, and the foundry and shipbuilding plant are equal to any this side of Suez.

Patent slipway for small steamers and launches. Complete boat and launch building shops.

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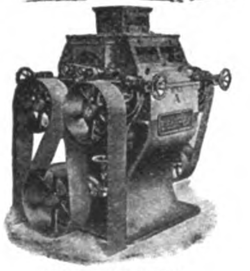

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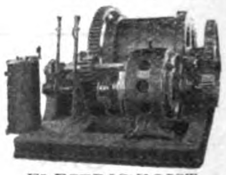

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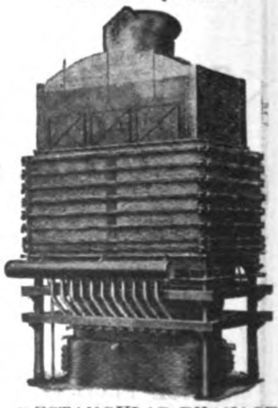
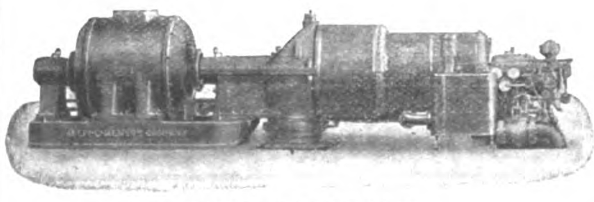


RECTANGULAR FURNACE



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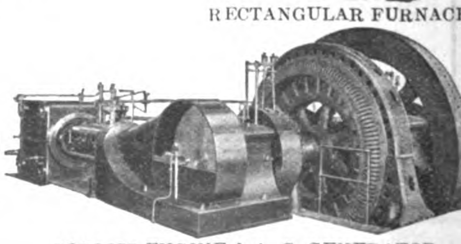

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DRY DOCK 787 FT. × 88 FT. DEPTH 34½ FT.

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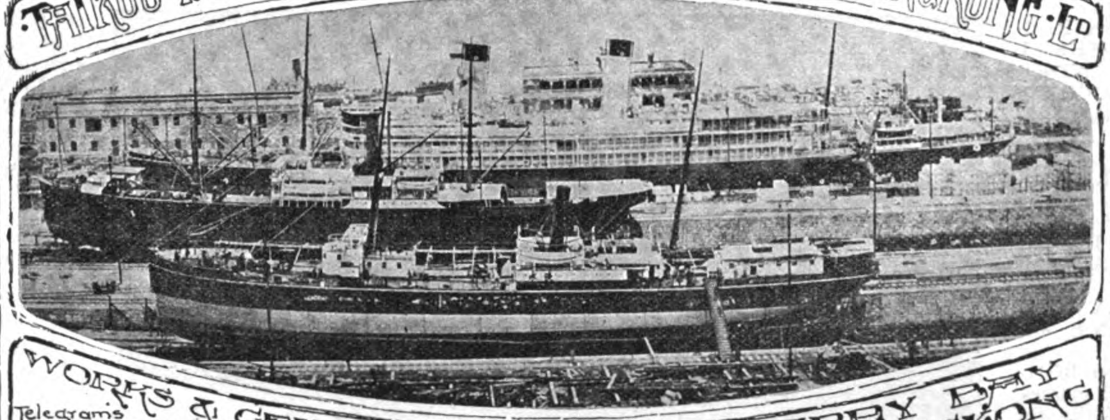

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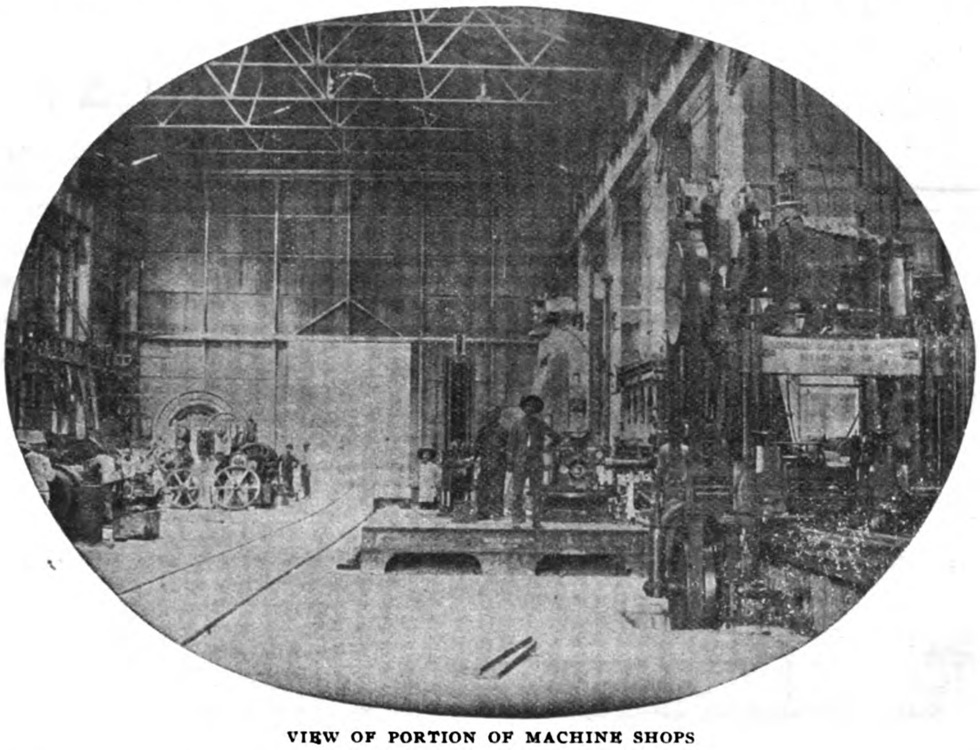

VIEW OF PORTION OF MACHINE SHOPS

AGENTS IN HONGKONG, CHINA AND JAPAN
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THE POWER FOR THE ESTABLISHMENT is generated by Gas Producers, on the Mond System, supplying 4 Cockerill Gas Engines of 3,000 collective horse power, driving Electrical Generators, and is transmitted throughout the Works by means of Electrical Motors.

AN ELECTRIC DERRICK CRANE capable of lifting weights up to 100 tons, is erected on the Sea Wall, and 14 Electric Overhead Travelling Cranes ranging from 5 tons to 100 tons, are fitted throughout the Workshops.

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THE DOCK PUMPS consist of 2 sets of Centrifugal, Electrically driven, pumps, together capable of emptying the Dock with 35 feet of water on the Sill in 2¾ hours.

THE MACHINERY in the Engine Works is laid out for dealing with the heaviest classes of Engines.

THE SLIPWAY CARRIAGES are of the latest pattern by Morton of Leith, and the Winding Gear consists of large electrically driven winches operating massive wire cables.

TENDERS SUBMITTED AND ESTIMATES GIVEN FOR BUILDING AND REPAIRING ALL CLASSES OF VESSELS; ALSO FOR EVERY DESCRIPTION OF ENGINE AND BOILER, MECHANICAL, ELECTRICAL AND CONSTRUCTIONAL WORK

HONGKONG & WHAMPOA DOCK CO., LTD.

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Telegraphic Address: **Manifesto Hongkong**
Dock Owners, Ship Builders, Marine and Land Engineers, Boiler Makers, Iron and Brass Founders, Forge Masters, Electricians.

All classes of CONSTRUCTIONAL and GENERAL ENGINEERING WORK undertaken, also LOCOMOTIVES, RAILWAY ROLLING STOCK and PLANT, BRIDGES, etc.

COAST and RIVER STEAMERS, TUG BOATS and LAUNCHES, SHALLOW DRAFT VESSELS and STERN WHEEL STEAMERS.

AUXILIARY MACHINERY for MARINE and LAND Purposes.

LAND and MARINE BOILERS of all sizes and classes.
GALVANIZING by the Electrical process.

IRON and BRASS CASTINGS of all descriptions.

FORGINGS in IRON and STEEL for SHIPS, ENGINES, and LAND WORK, large and small.

We make a specialty of HIGH SPEED MOTOR BOATS for PASSENGER and CARGO Traffic.

ALL CLASSES of COCKS, VALVES and FITTINGS in IRON and BRASS supplied.

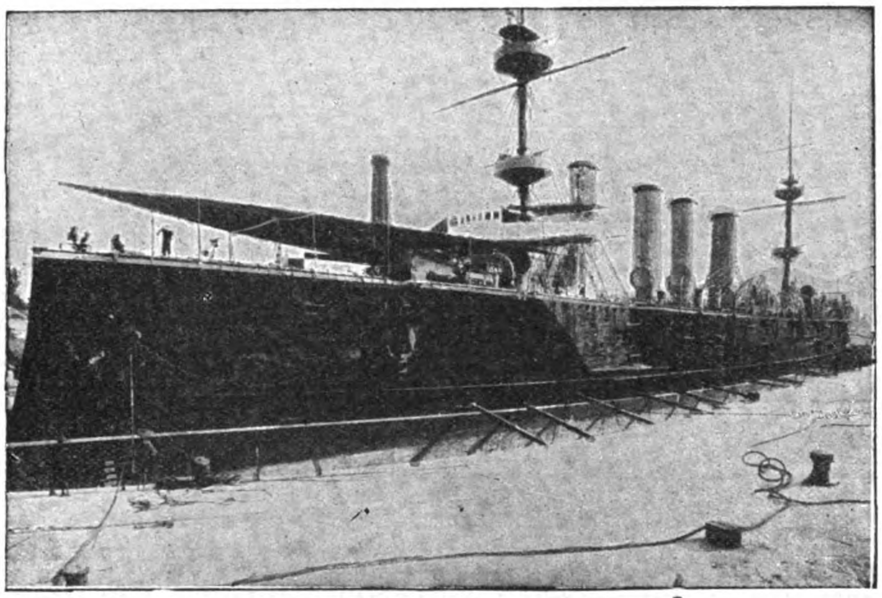
BOLTS, NUTS and RIVETS MANUFACTURED at SHORT NOTICE.

FINISHED NUTS in BRASS and IRON.

A LARGE STOCK of STEEL and IRON PLATES, BARS and ANGLES, always in hand.

The Company possesses SIX GRANITE DOCKS and TWO PATENT SLIPWAYS and these are equipped for EXPEDITIOUS WORK. Our plant is of the most modern type throughout.

Ship Owners and Captains are assured that DOCKING and REPAIRS are carried out PROMPTLY and at MODERATE CHARGES.



H. M. S. POWERFUL IN NO. 1 DOCK, KOWLOON

The Dimensions of Docks and Slips are as follows:—

Name of Dock or Slip	*Length on Keel Blocks*	*Entrance Breadth*	*Depth Over Sill at Ordinary Spring Tides*	*Rise of Tide*	
				Springs	*Neaps*
KOWLOON	*Feet*	*Feet*	*Feet*	*Feet*	*Feet*
No. 1 Dock, Kowloon.........	700	86 ft. top / 70 ft. bottom	30′	7′ 6″	3
No. 2 Dock, Kowloon.	371	74′	18′ 6″	7′ 6″	—
No. 3 Dock, Kowloon.........	264	49′ 3″	14′	7′ 6″	—
Patent Slip, No. 1, Kowloon...	240	60′	14′	7′ 6″	—
Patent Slip, No. 2, Kowloon...	220	60′	12′	7′ 6″	—
TAI-KOK-TSUI					
Cosmopolitan Dock..........	466	85′ 6″	20′	7′ 6′	—
ABERDEEN					
Hope Dock	430	84′	23′	7′ 6″	—
Lamont Dock.................	333	64′	16′	7′ 6″	—

Please Address Enquiries to the Chief Manager, R. M. DYER, B. Sc., M. I. N. A., Kowloon Dock, Hongkong.

Telephone No. 13 K. Head Office, Kowloon.

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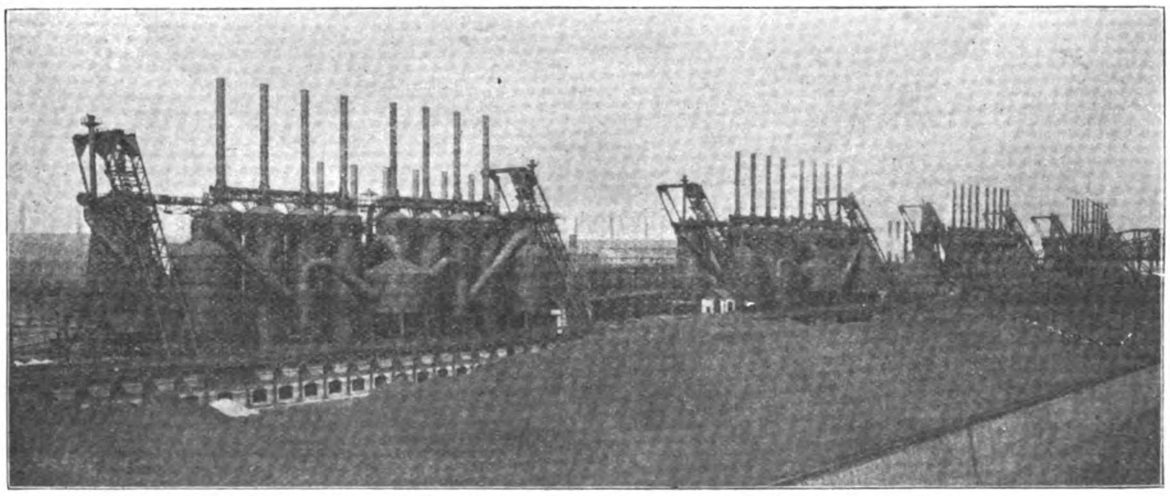

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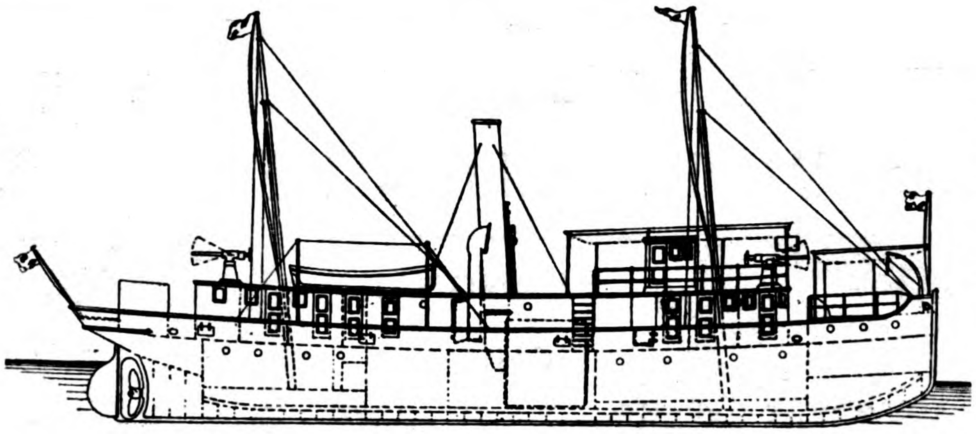

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I. C. M.'S GUNBOAT "KAI-HAI" BUILT BY THE NEW ENGINEERING AND SHIPBUILDING WORKS, LTD. SHANGHAI, FOR SERVICE IN NORTH CHINA: SPEED, 11 KNOTS

COAST AND RIVER STEAMERS, TUGBOATS, LAUNCHES, LIGHTERS, PONTOONS, SHALLOW DRAFT SIDE OR STERN WHEEL STEAMERS. ENQUIRIES SOLICITED. PLANS, SPECIFICATIONS AND ESTIMATES FURNISHED. ALL CLASSES OF ENGINEERING WORK UNDERTAKEN

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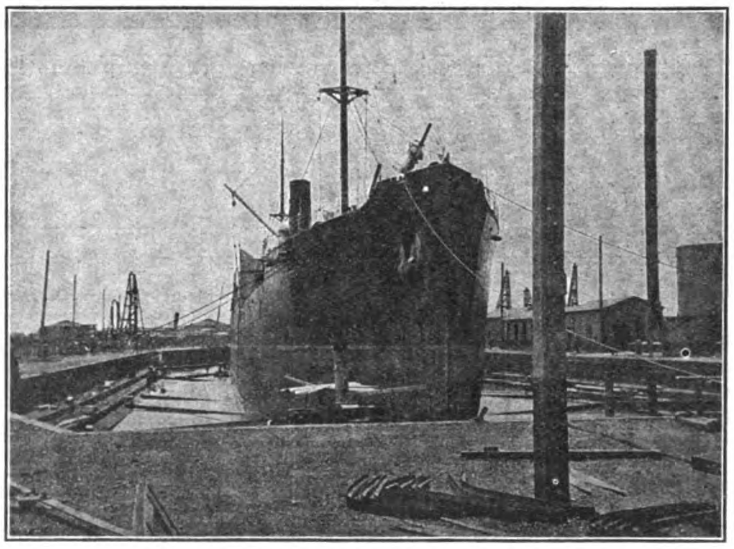
SHANGHAI

PROPRIETORS OF THE

YANGTSZEPOO DOCK

THE DOCK, WORKS AND OFFICE ARE LOCATED ON THE SHANGHAI SIDE OF THE RIVER, 15 MINUTES BY ELECTRIC TRAM FROM HEART OF THE CITY

THE WORKS ARE EQUIPPED WITH THE MOST MODERN MACHINERY, CAPABLE OF HANDLING THE LARGEST MARINE ENGINEERING WORK



VIEW OF YANGTSZEPOO DOCK

PARTICULARS OF DOCK

LENGTH ON BLOCKS 455'0"

" OVERALL - 469'0"

WIDTH, ENTRANCE 74'0"

" SILL - - 64'0"

DEPTH ON SILL, (H. W. O. S. TIDES) - - - 21'0"

DEPTH ON 3'6" BLOCKS (H. W. O. S. TIDES) 19'0"

PUMPS CAN EMPTY DOCK WITHOUT VESSEL IN, IN 3½ HOURS.

WORKSHOPS LOCATED AT HEAD OF DOCK

OFFICE, DOCK & WORKS, 37 YANGTSZEPOO ROAD, SHANGHAI

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DOCK OWNERS ENGINEERS

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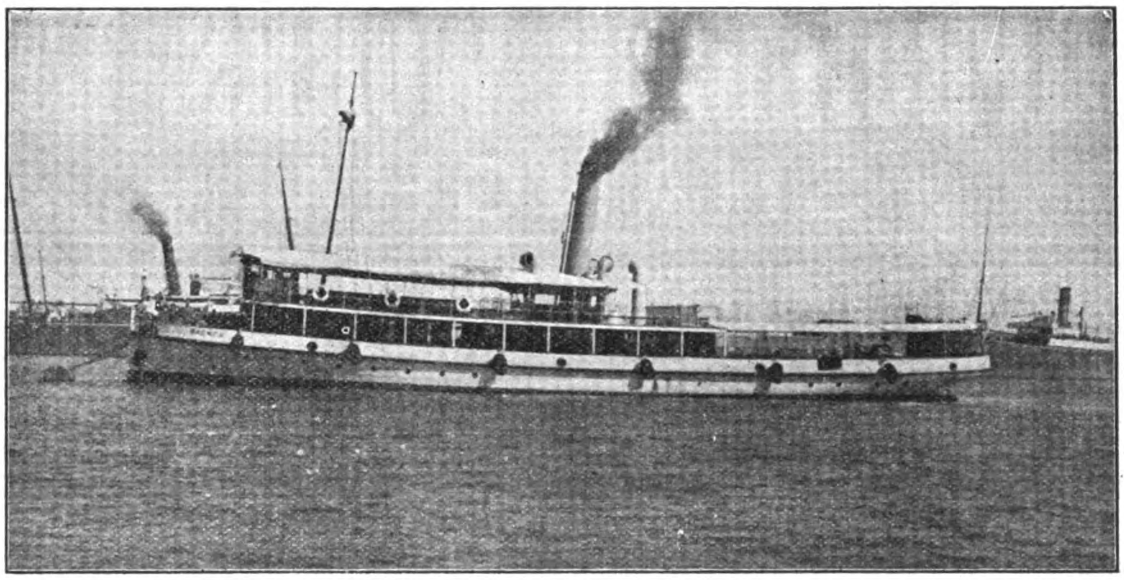


NORDDEUTSCHER LLOYD TENDER "BREMEN," BUILT BY THE SHANGHAI ENGINEERING AND DOCK COMPANY

The Docks are five in number, ranging in length from 360 feet to 560 feet, and breadth of entrance from 57 feet to 82 feet, with the depth of water on the sill from 16 feet to 24 feet.

The Dock charges are very moderate.

The Water Frontage is about 1¼ miles in length. Wharves and Pontoons are arranged where steamers can moor during repairs; and slips for hauling up small vessels are provided. Sheer legs capable of lifting 65 tons are placed at the various Docks.

The extensive Shipbuilding yards and workshops are provided with the latest improvements in tools, traveling cranes of 70 tons' capacity, hydraulic and pneumatic machinery.

Lit up by Electric light with railway lines through workshops and yards.

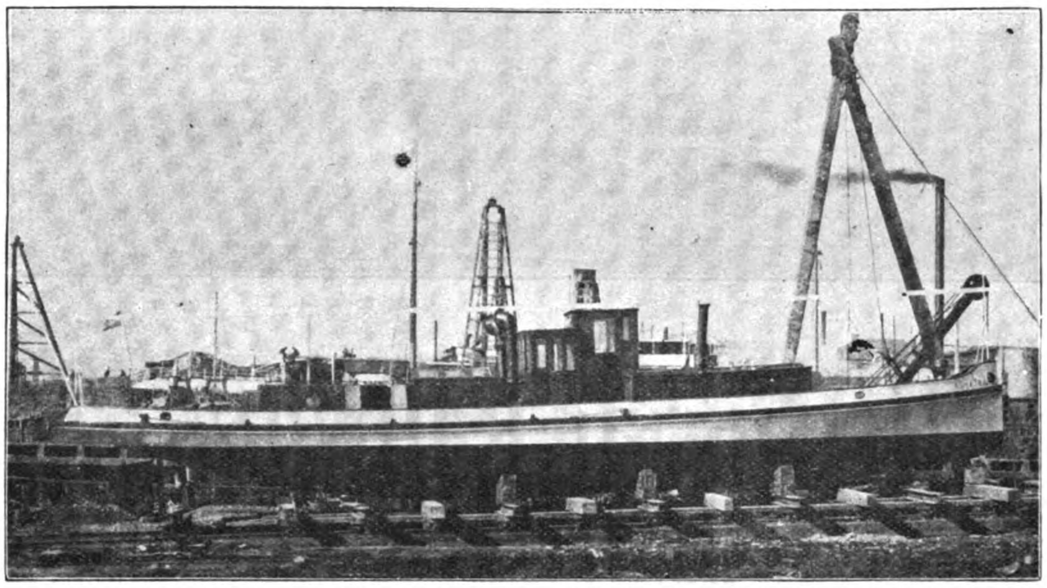
Powerful salvage appliances can be supplied at short notice. Enquiries immediately attended to.

Estimates given for all classes of work; Coast Steamers, Side and Stern-Wheelers, Tugboats, Launches, Steam Barges, Dredgers, Floating Cranes, and Lighters a speciality.

Every description of repairs and renewal work undertaken and expeditiously executed.

Land and Marine Engines and Boilers, Centrifugal, Mining, and other pumping machinery always in stock or in progress, also power driven Machine Tools, Engineer's Hand Tools, Steam, Gas, Oil, and Electric machinery and engineering accessories generally.

CORRESPONDENCE INVITED



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ESTIMATES given for every description of Engineering and Constructional work and repairs, including supplying and installing of HOT WATER and STEAM HEATING in all its branches and HOT and COLD WATER SUPPLIES.

THE WORKS are electrically driven, and are equipped throughout with up-to-date machinery and labour saving devices, including an HYDRAULIC PLANT, and appliances to undertake constructing or repairing SHIPS, ENGINES, BOILERS, etc.

EXPERIENCED EUROPEAN STAFF SUPERVISES ALL BRANCHES OF WORK

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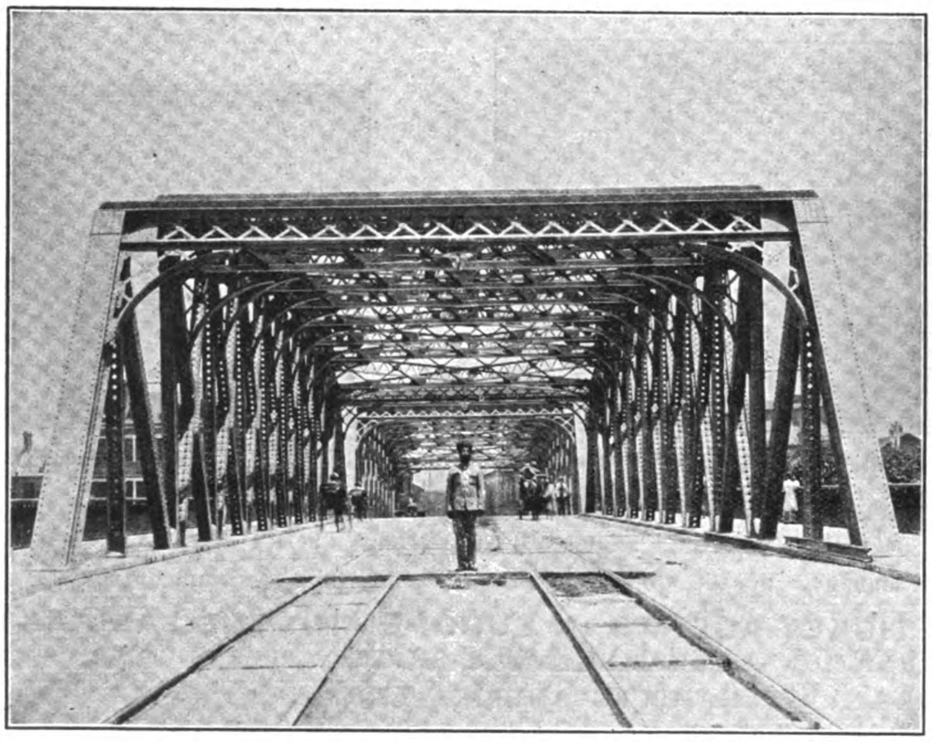

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BRAKE RODS, TRUSS RODS, TRUCKS, AND BRIDGES, SUBJECTED TO SEVERE VIBRATORY STRAINS, SHOULD ALWAYS BE COATED WITH PATTON'S

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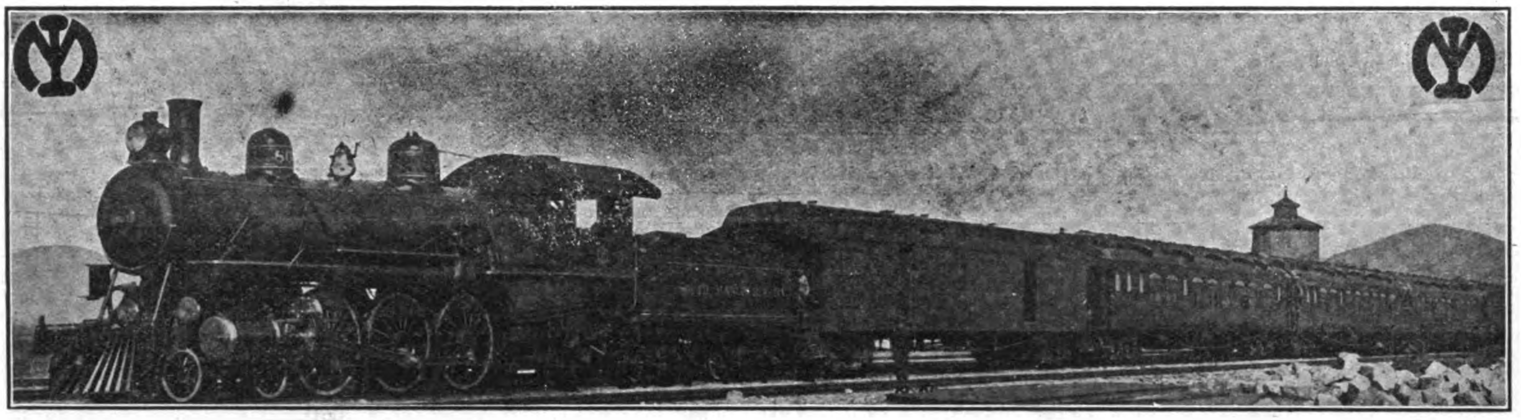

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From Dairen	*Time Required*
To Changchun	15½ hours
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,, St. Pet'burg (via Viatka)	10 days.
,, Berlin	11 ,,
,, Paris	12 ,,
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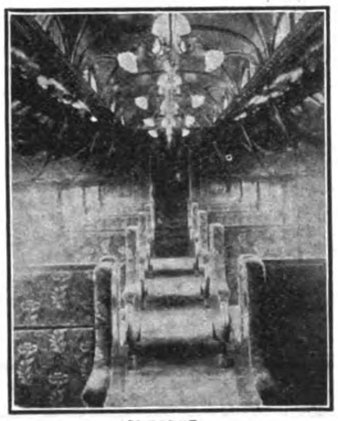
SHORTEST, QUICKEST AND CHEAPEST ROUTE BETWEEN THE FAR EAST AND EUROPE VIA DAIREN



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4 TIMES WEEKLY EXPRESS TRAINS

Composed of excellently equipped SLEEPING, DINING and 1st CLASS CARS, are operated between DAIREN & CHANGCHUN in connection with the TRANS-SIBERIAN ROUTE and SHANGHAI MAIL STEAMERS.

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These Express Trains connect at MUKDEN with the PEKING-MUKDEN RAILWAY running via TIENTSIN and connect also with the MUKDEN-ANTUNG LINE traversing a most picturesque country and connecting with the KOREAN RAILWAY.

INTERIOR PULLMAN DAY COACH

OTHER STEAMER CONNECTIONS AT DAIREN

Regular Steamship Services are maintained from DAIREN to MOJI, KOBE, CHEMULPO, TIENTSIN, CHEFOO, TSINGTAU and other ports in Japan and China.

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RAILWAY HOTELS

YAMATO HOTEL (Tel. Add. "Yamato") at DAIREN, PORT ARTHUR, MUKDEN, FUSHUN and CHANGCHUN all managed by the Company, provide comfortable accommodation.

TICKET AGENTS IN EUROPE AND THE FAR EAST.

The INTERNATIONAL SLEEPING CAR & EXPRESS TRAINS CO., MESSRS. THOS. COOK & SON & REISEBUREAU DER HAMBURG AMERIKA LINIE.

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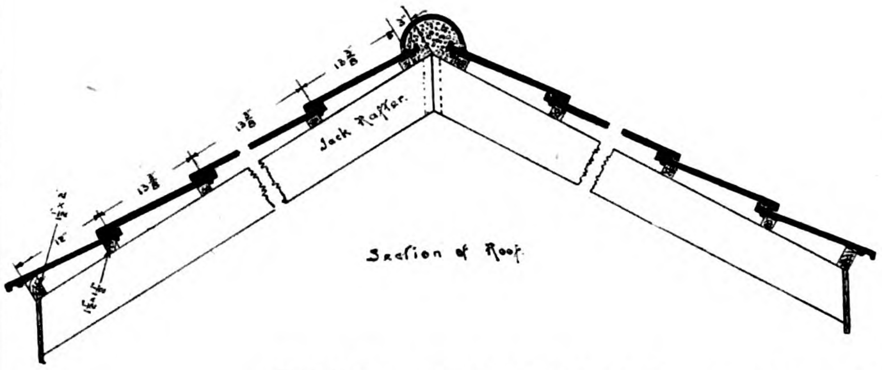
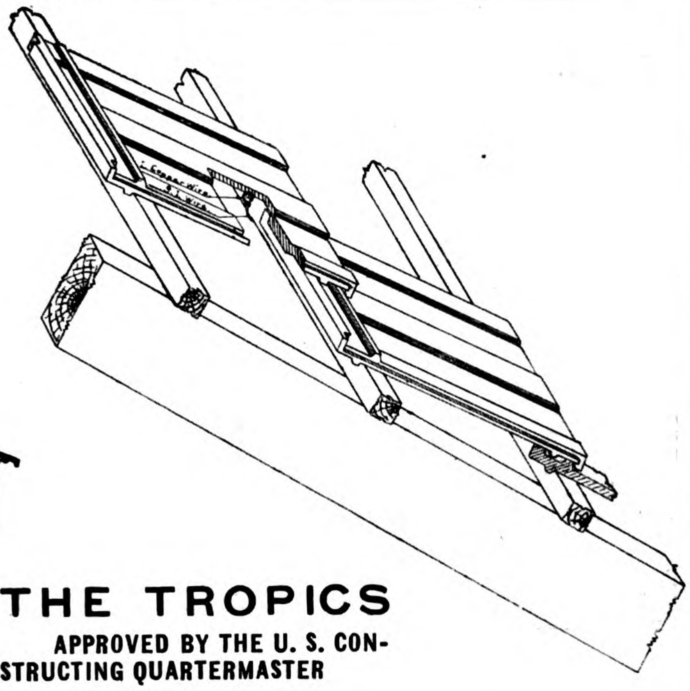
DOUBLE INTERLOCKING REINFORCED CEMENT ROOFING TILE

PATENT APPLIED FOR





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ADOPTED BY THE PHILIPPINE GOVERNMENT AS ITS STANDARD || APPROVED BY THE U. S. CONSTRUCTING QUARTERMASTER

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Office: 118-122 Nueva, Binondo, Manila, P. I.

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Posts, Pilings, R. R. Ties, Bridge Timber, Telegraph Poles.

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Temporary Piles of 4 Group timber 10 to 70 ft. long.

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TRADE MARK **RACK-A-ROCK** REGISTERED

1878 — PATENTED — 1910

BLASTING POWDER

As strong as "A 1" Dynamite
Two Ingredients { Solid / Liquid
Shipped in separate packages
Non-explosive BEFORE mixing
NO EXPENSIVE MAGAZINE NECESSARY
Store in any dry place
Safer to handle AFTER mixing, than any other powder
Packed in cloth cartridges, 3/4" to 2" diam. X 6½" to 8" long.

RENDROCK POWDER CO.

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AGENTS FOR CHINA

SHANGHAI
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CANTON
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MELCHERS & CO.

BREMEN
TIENTSIN
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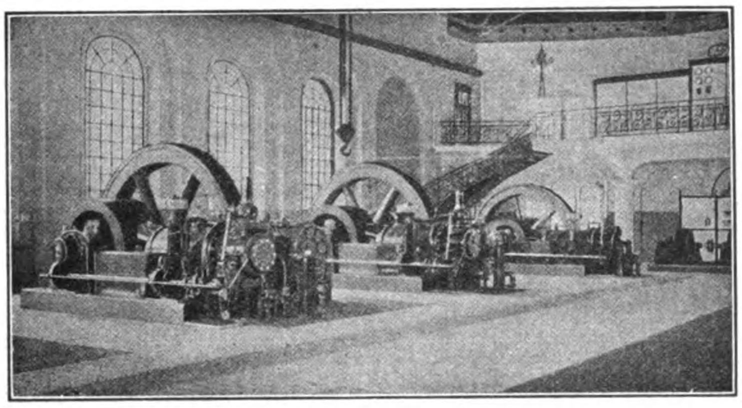

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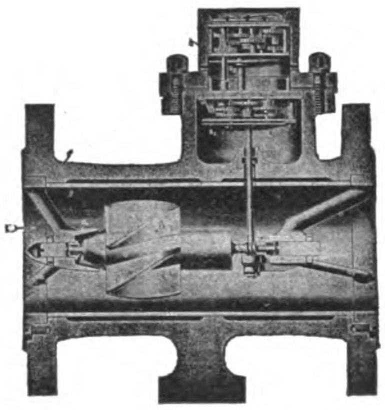

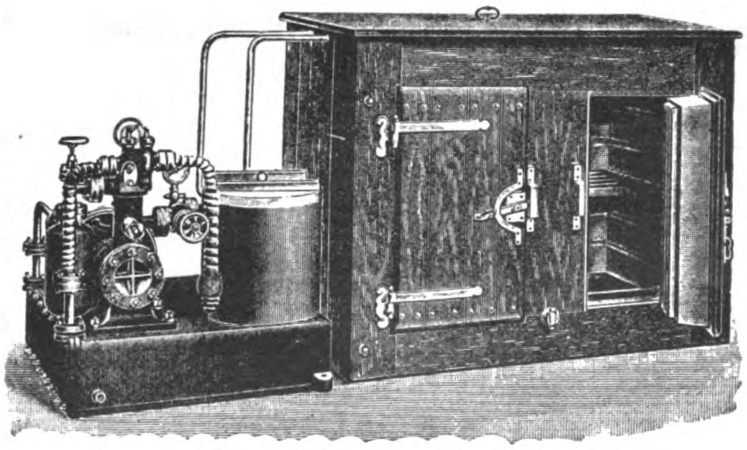

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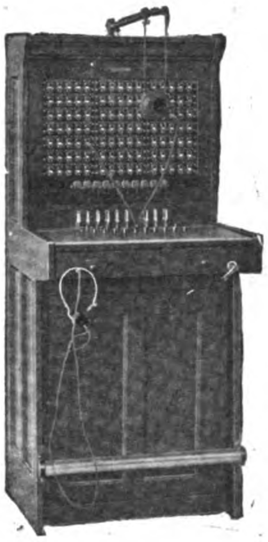

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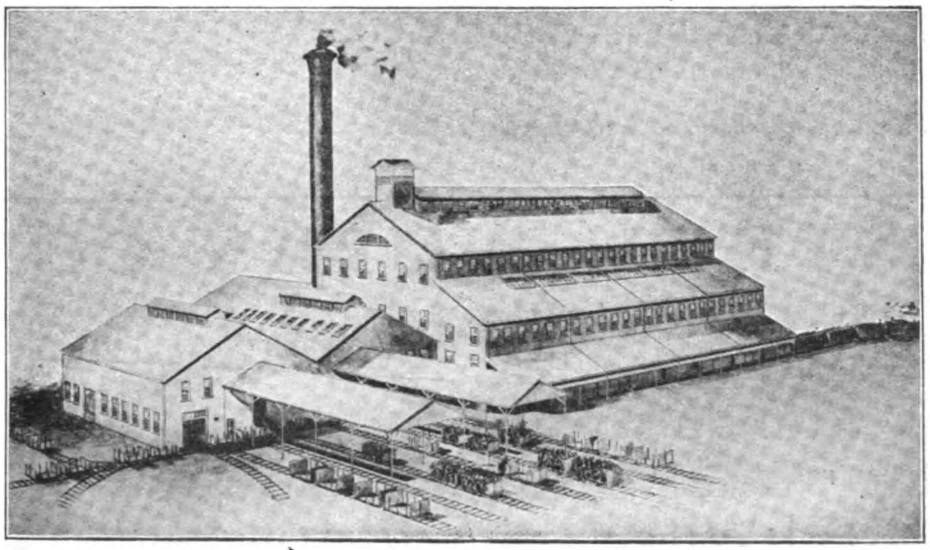

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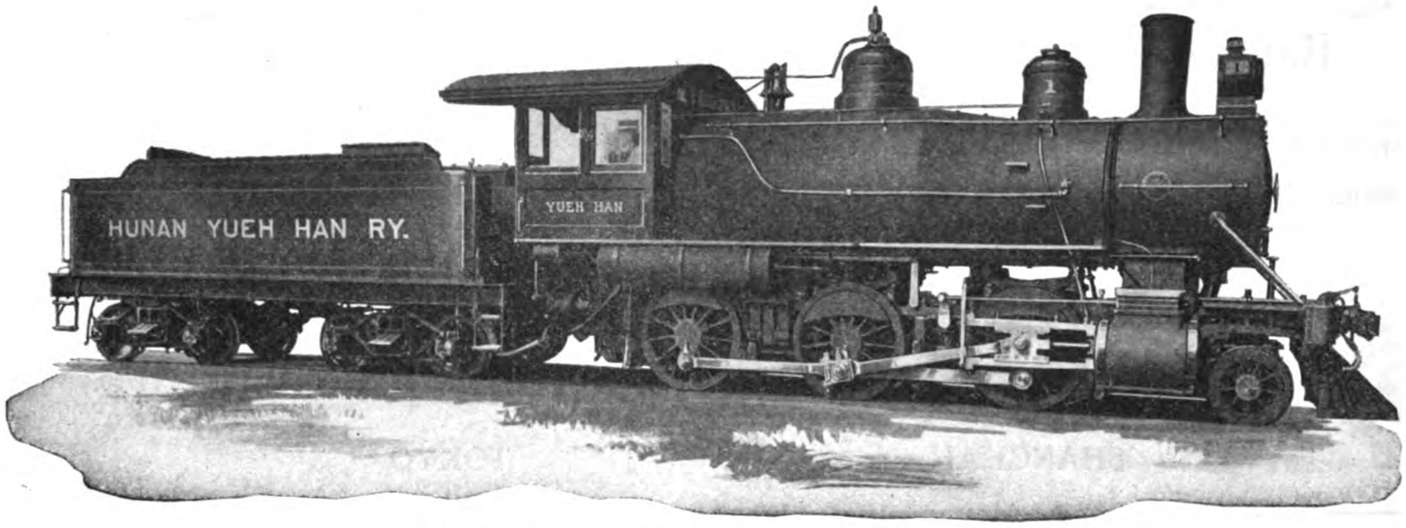

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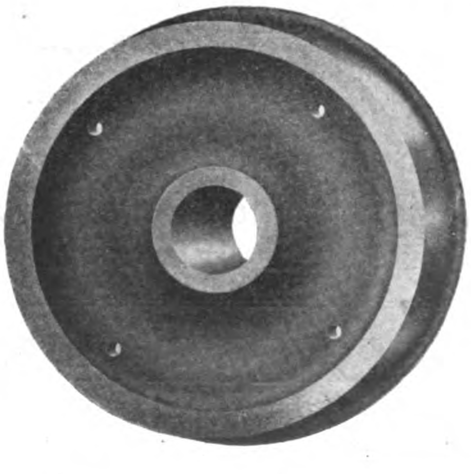

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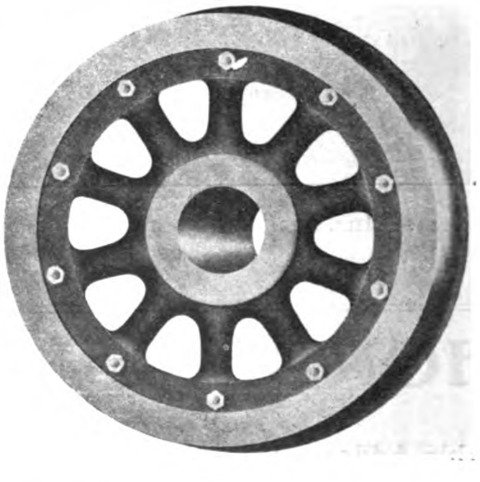

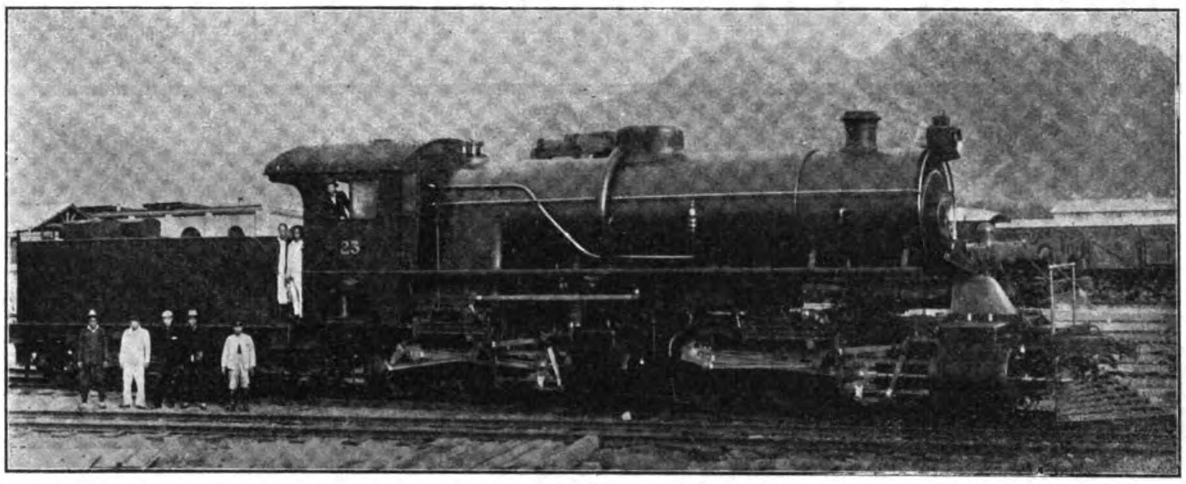

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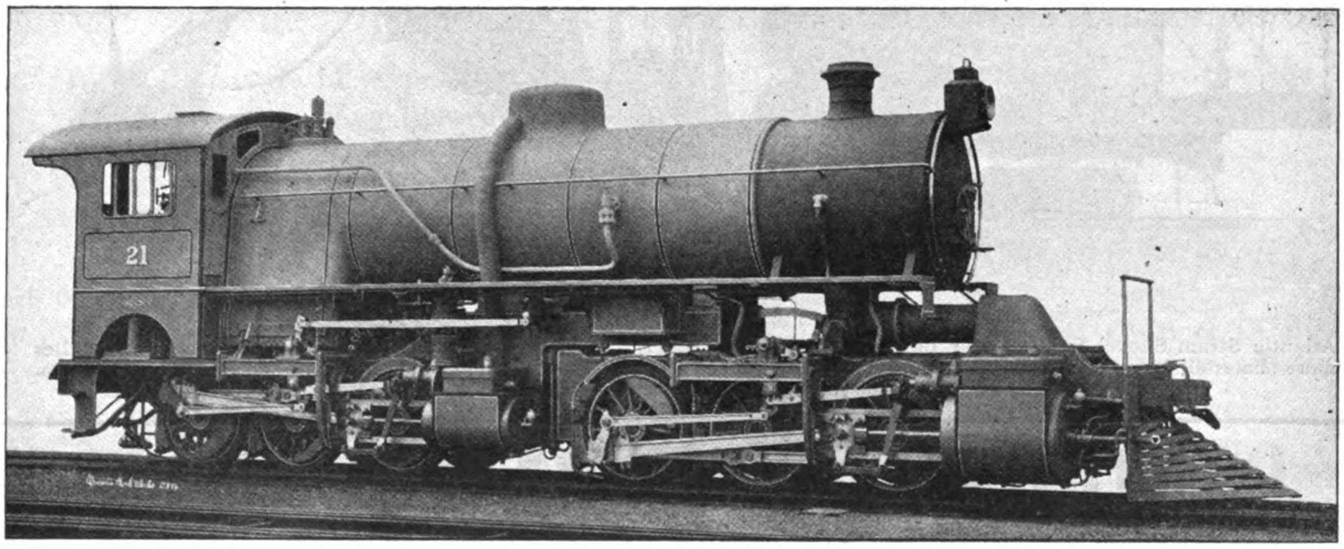

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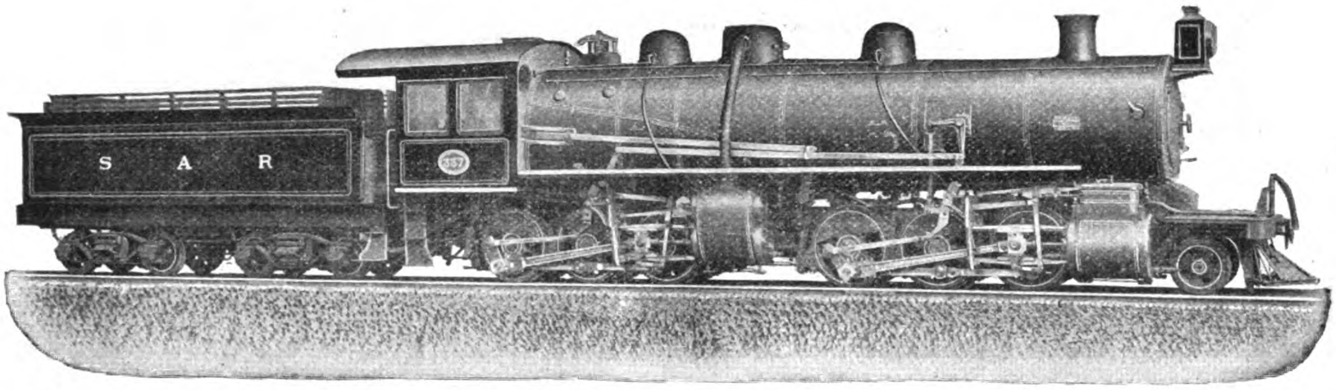
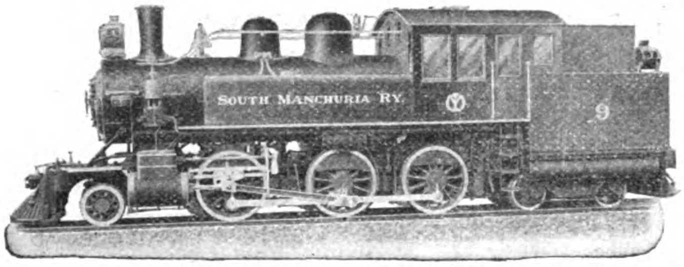
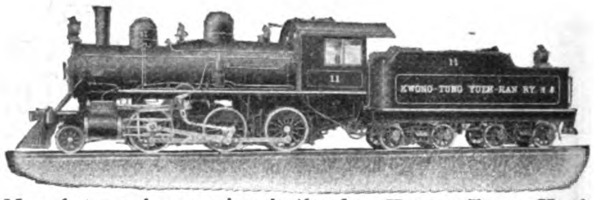


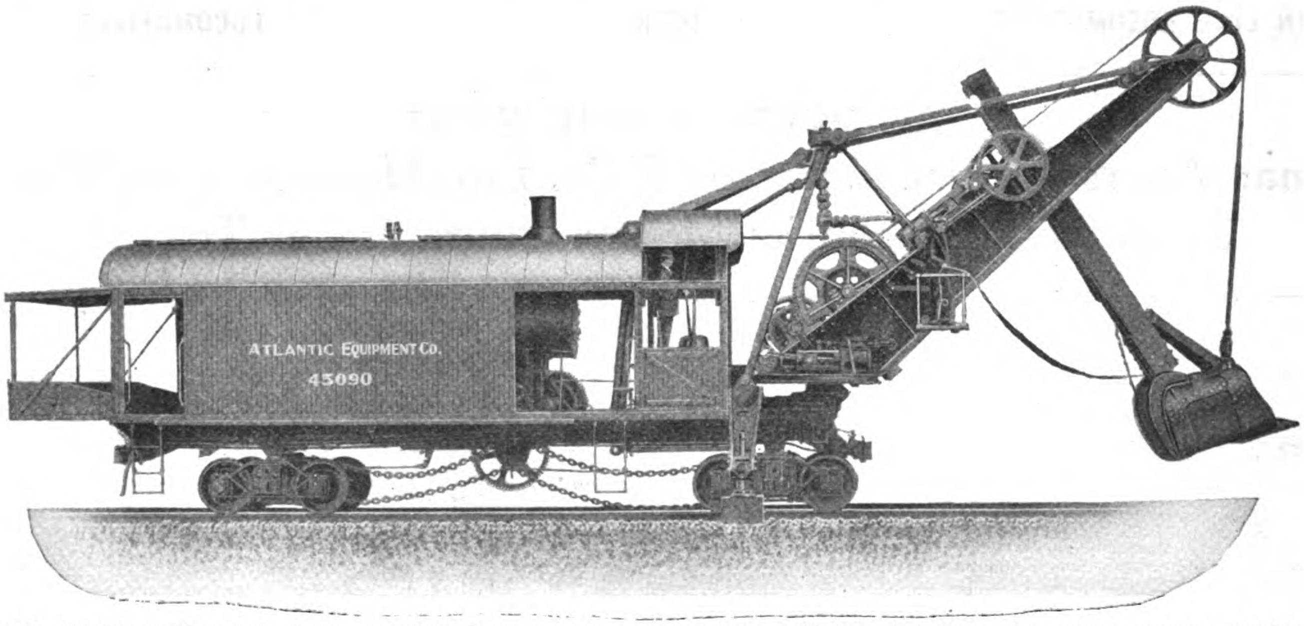
Articulated compound locomotive built for South African Government Railways to operate heavy trains on roads with steep grades and sharp curves.



Six coupled, double end locomotive built for South Manchuria Railway.



Mogul type locomotive built for Kwong-Tung Yueh Han Railway.



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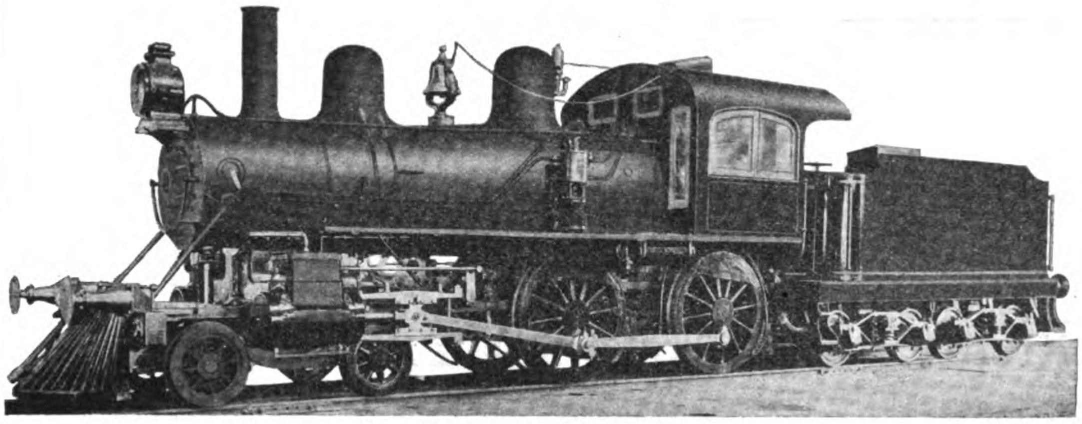

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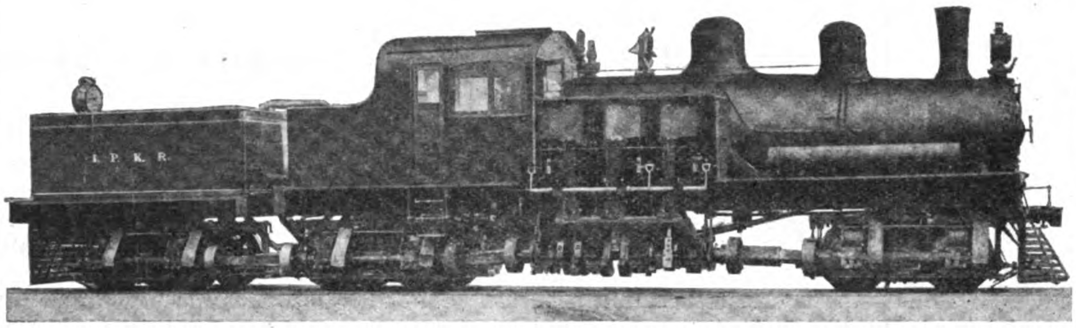

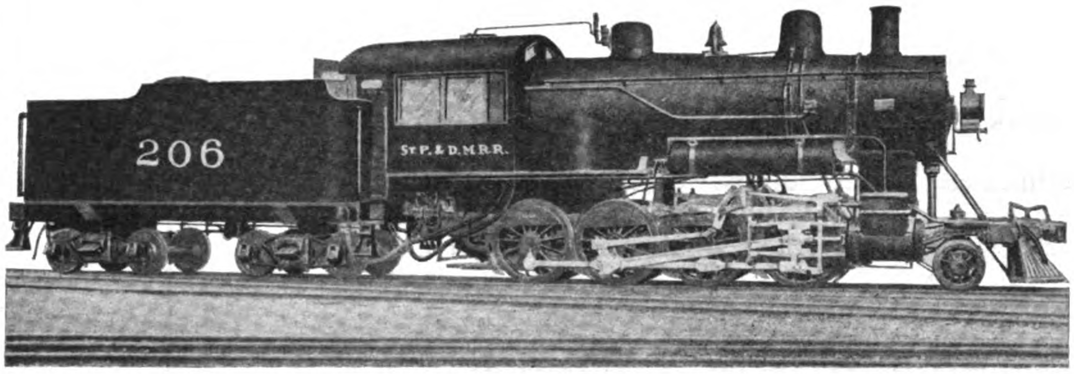

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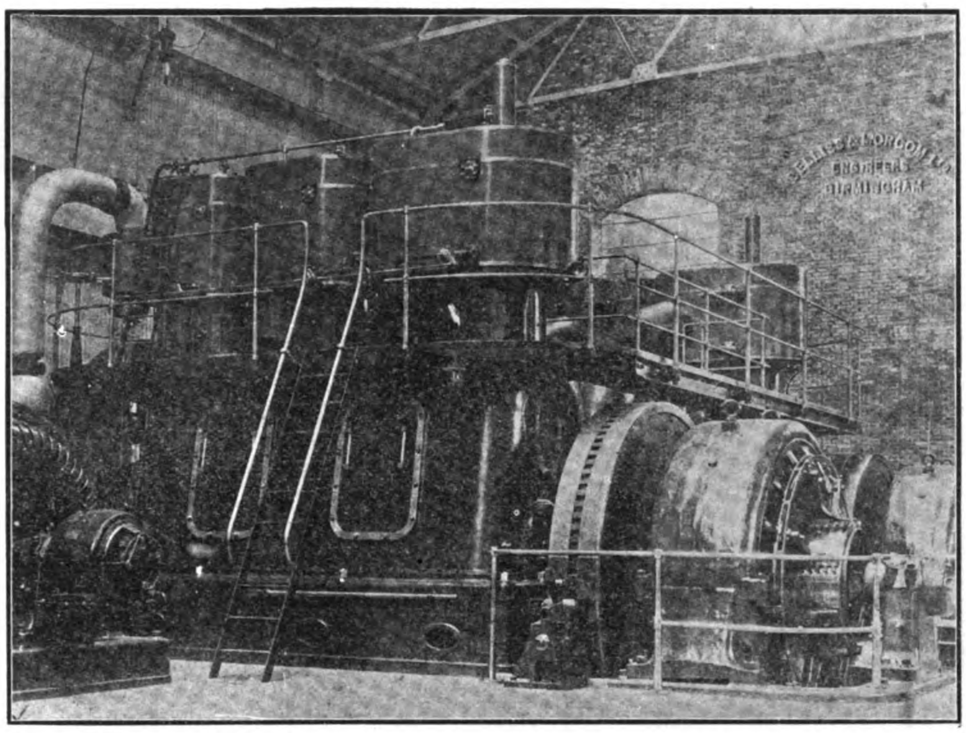

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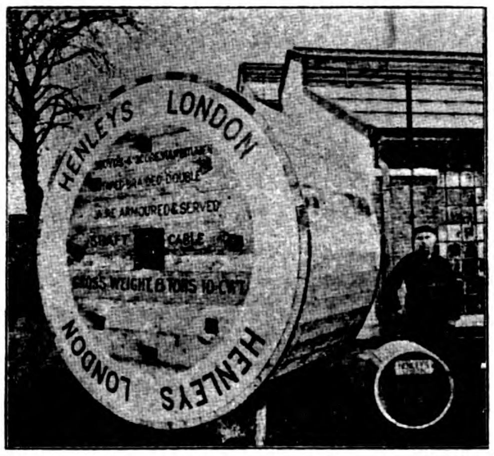

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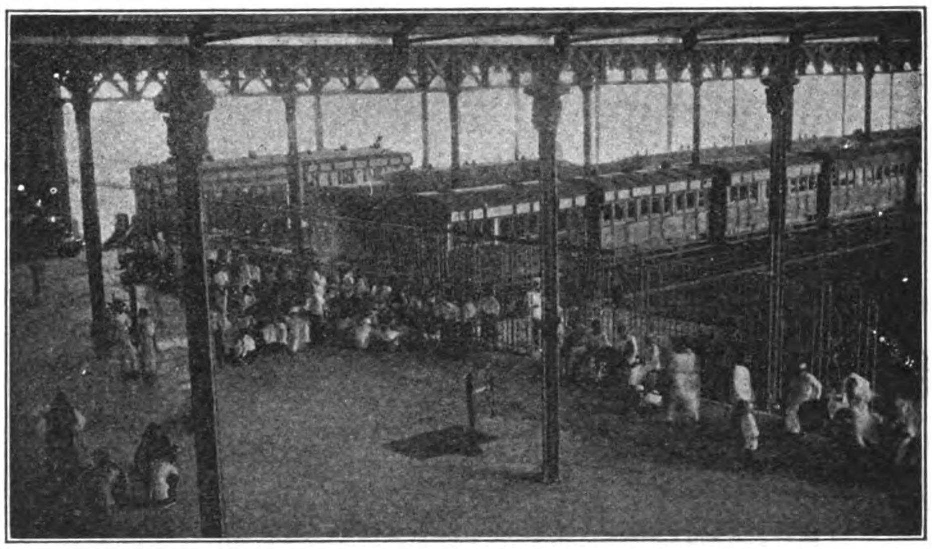

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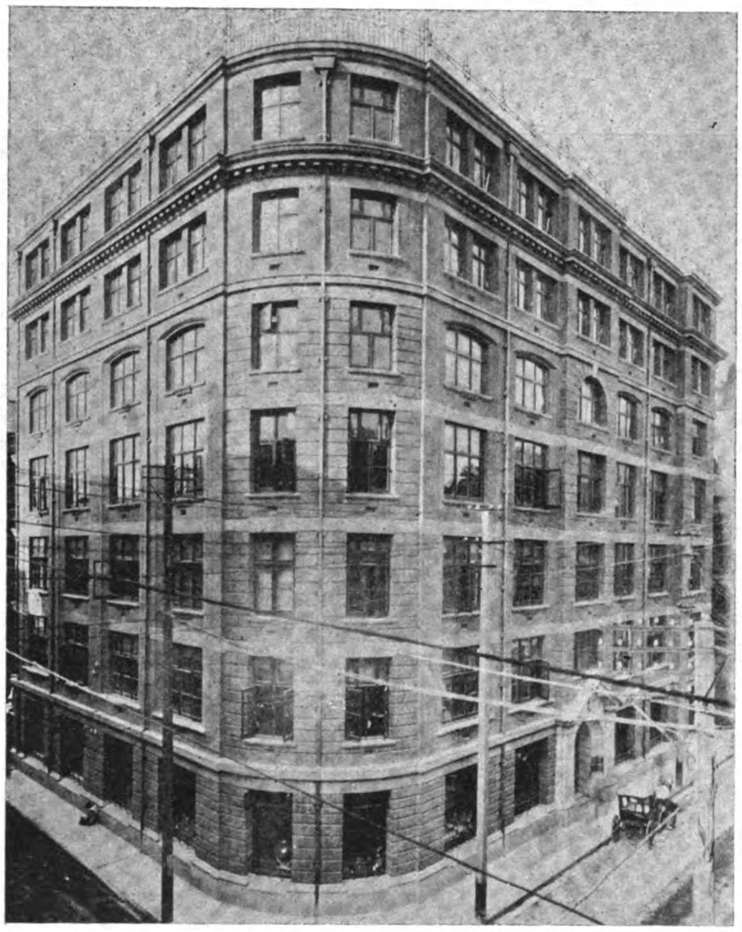

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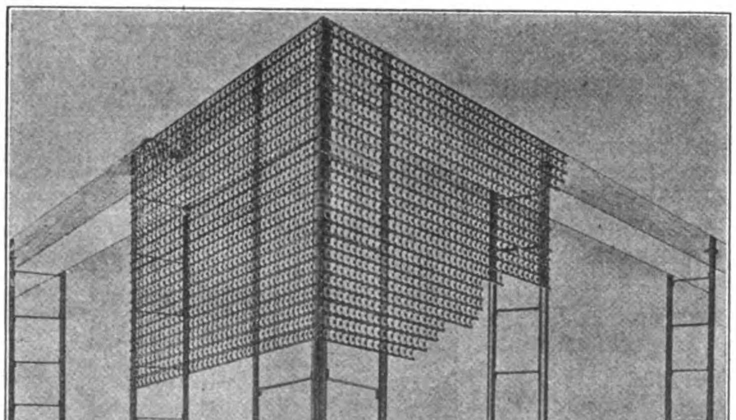

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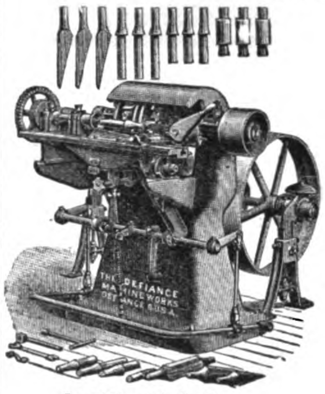

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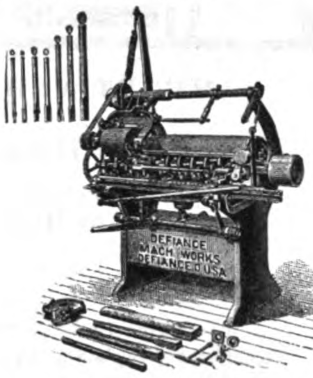

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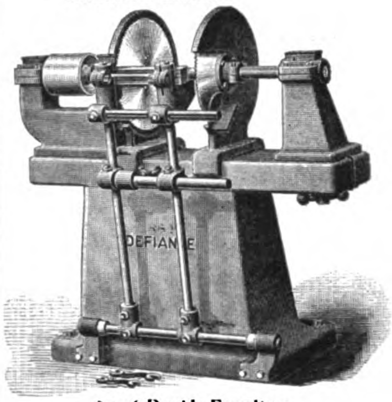

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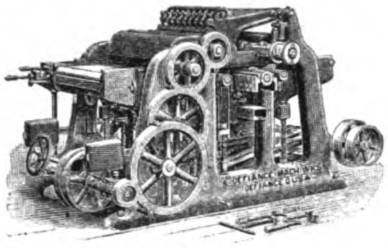

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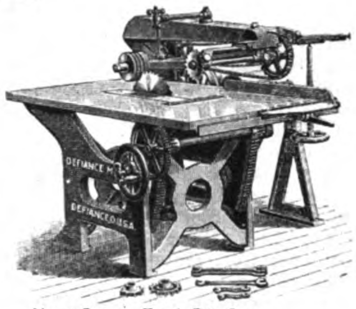

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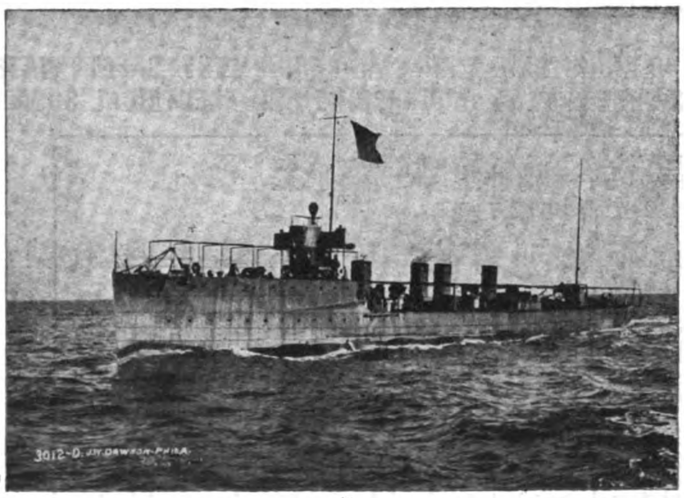

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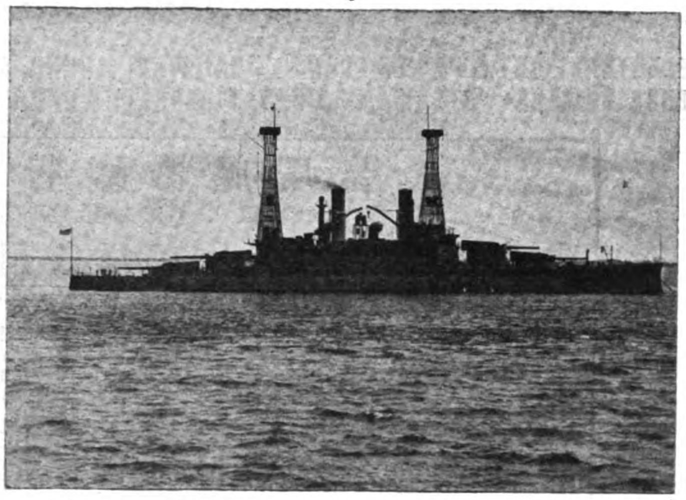

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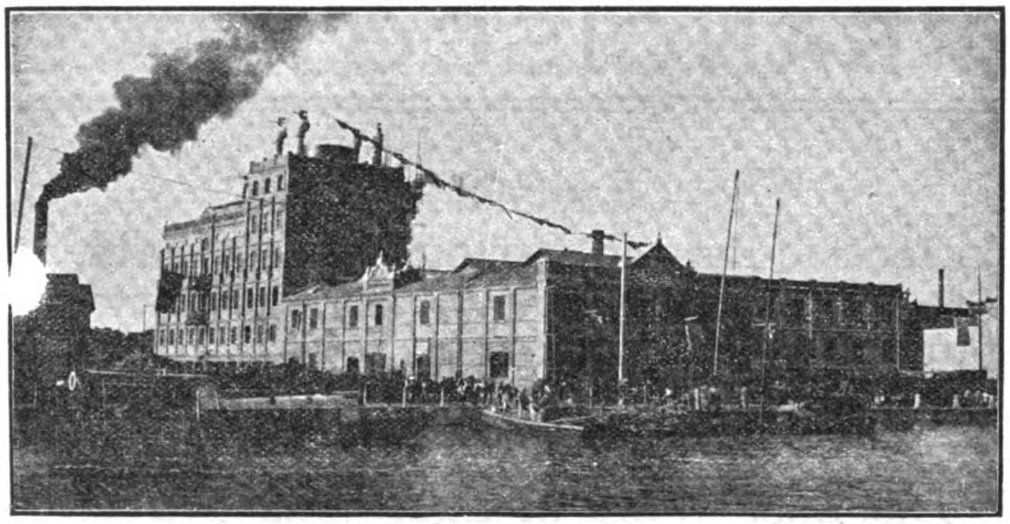

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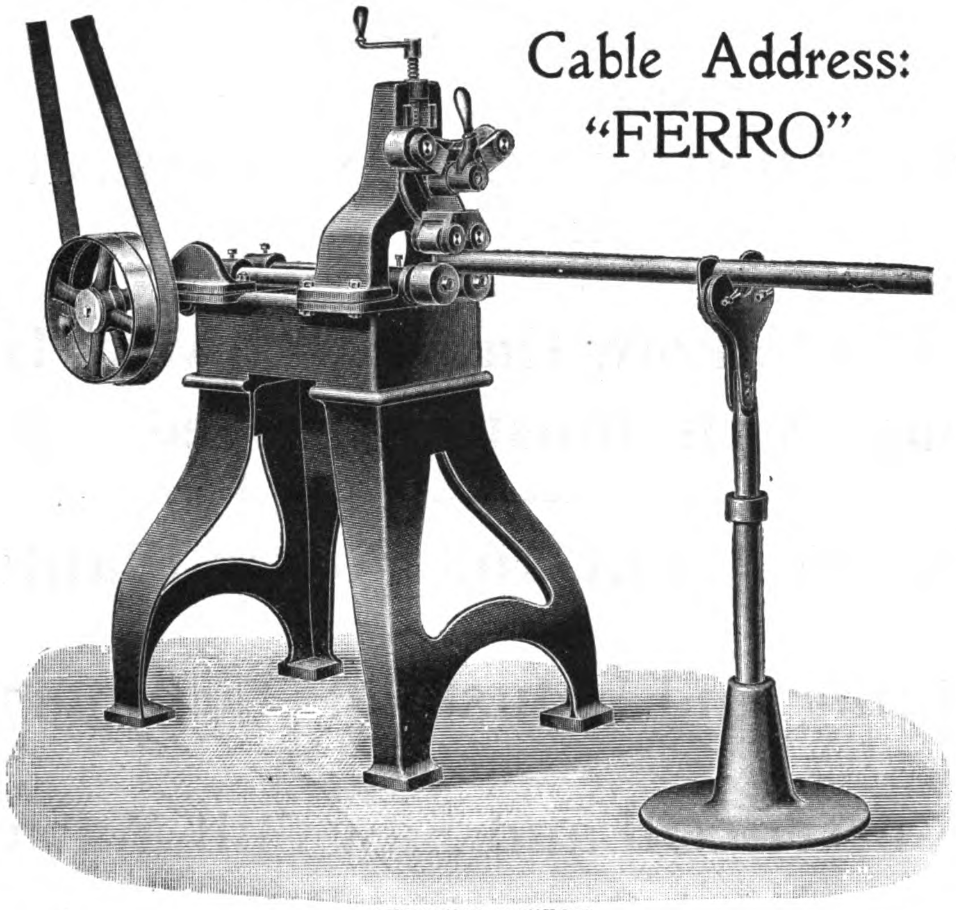

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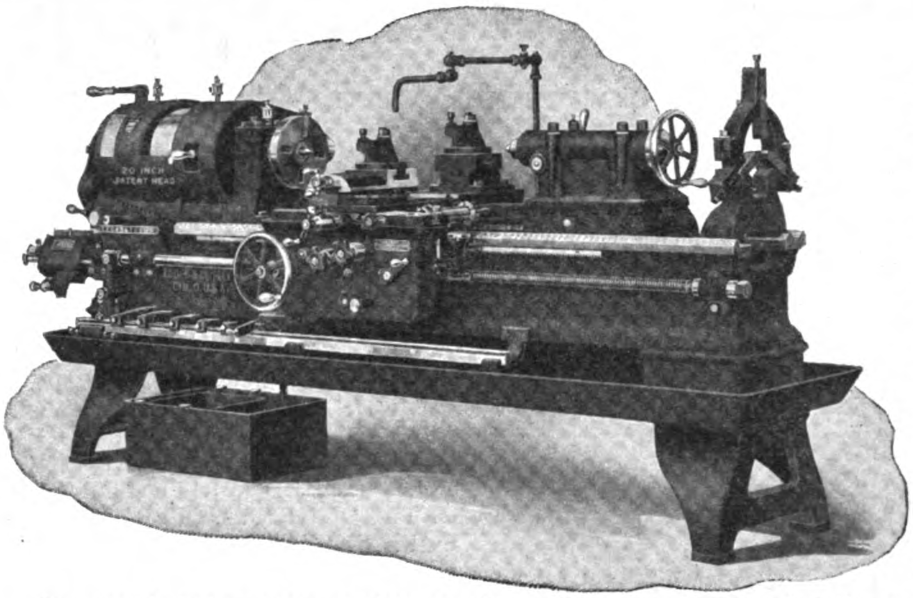

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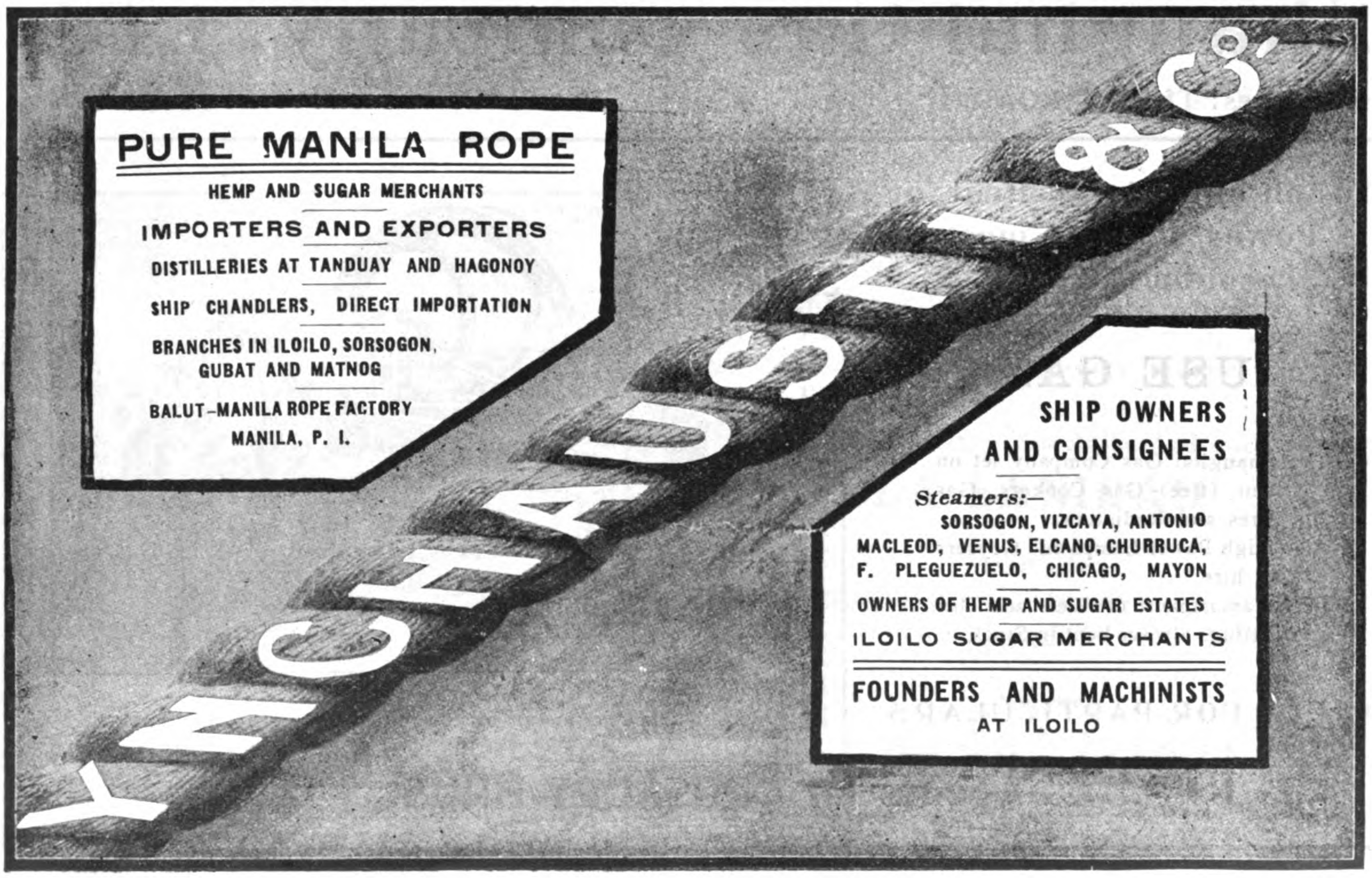

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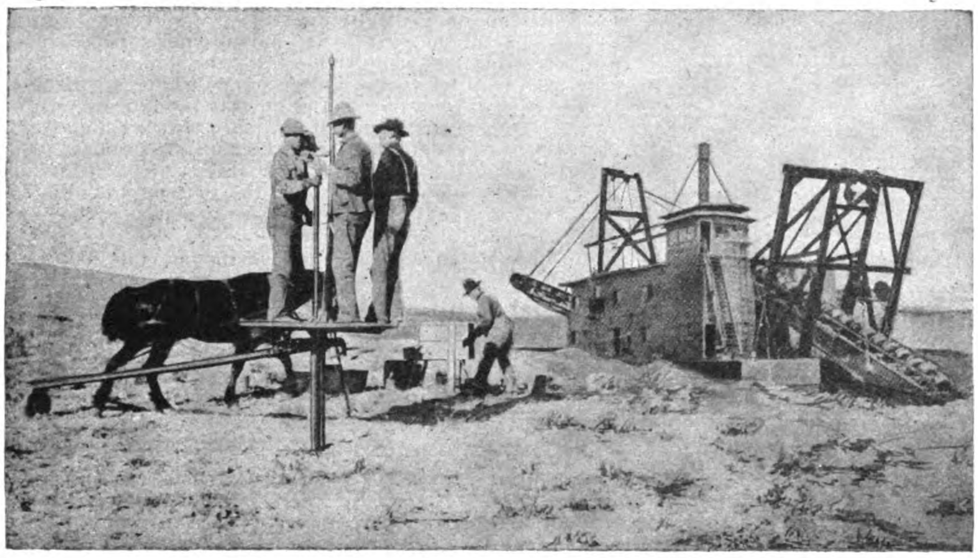

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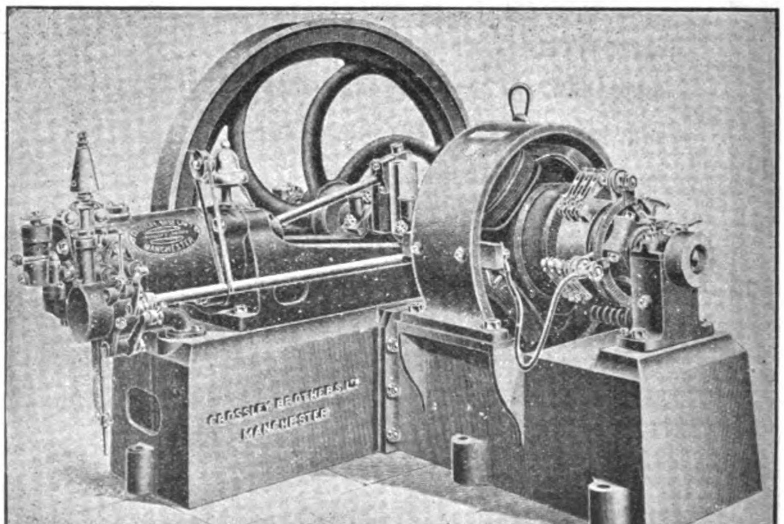

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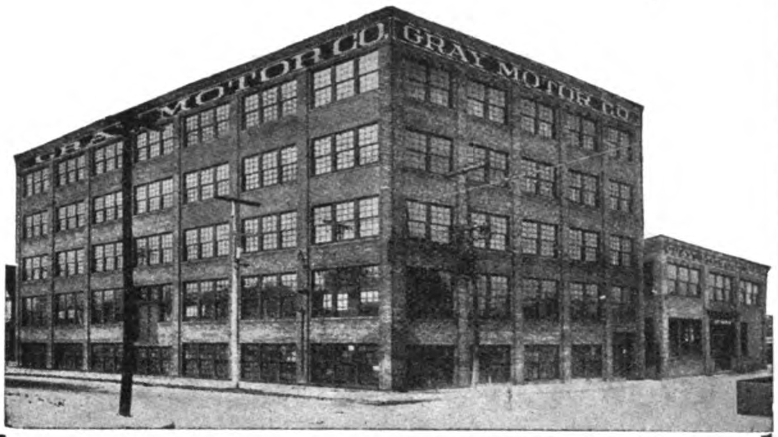

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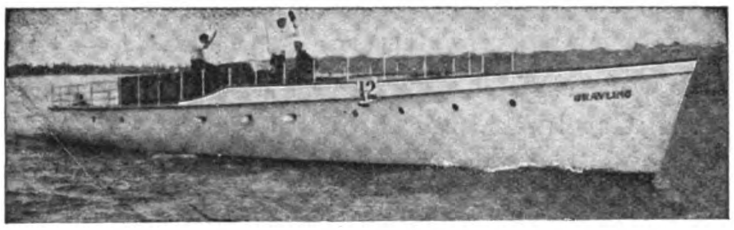

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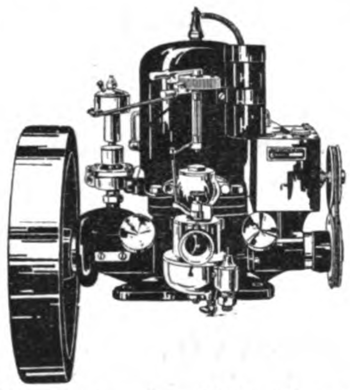

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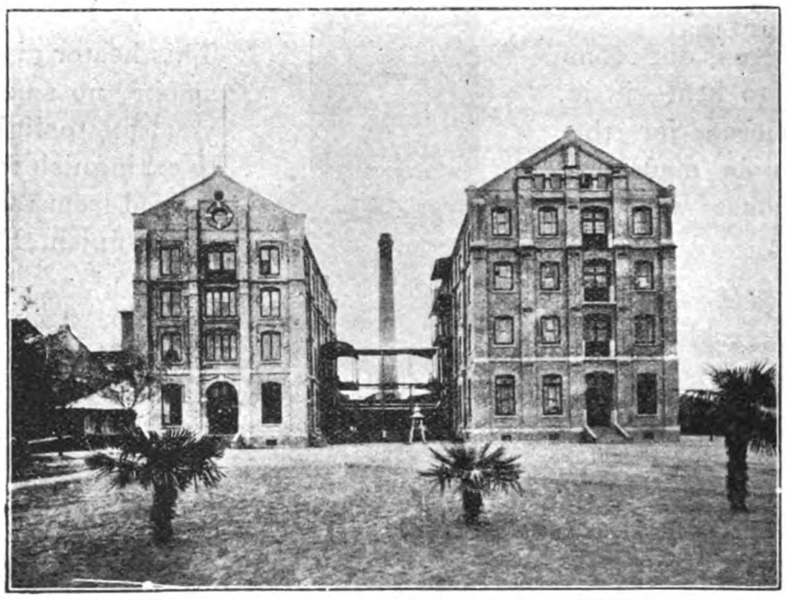

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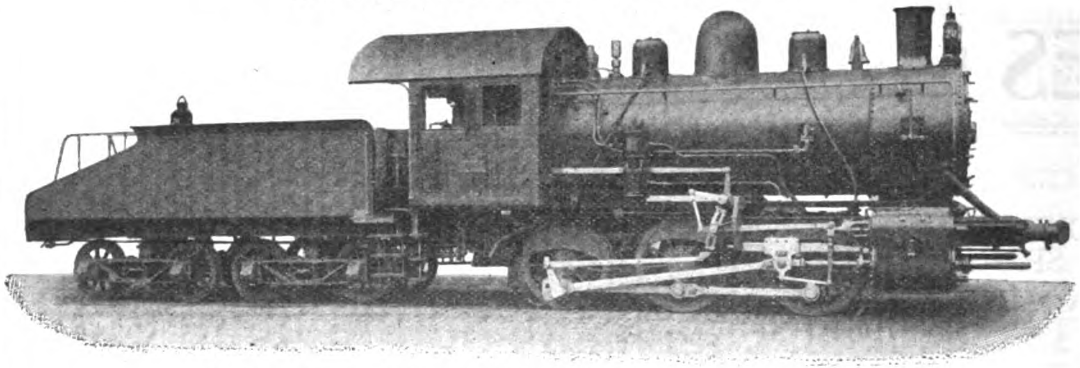

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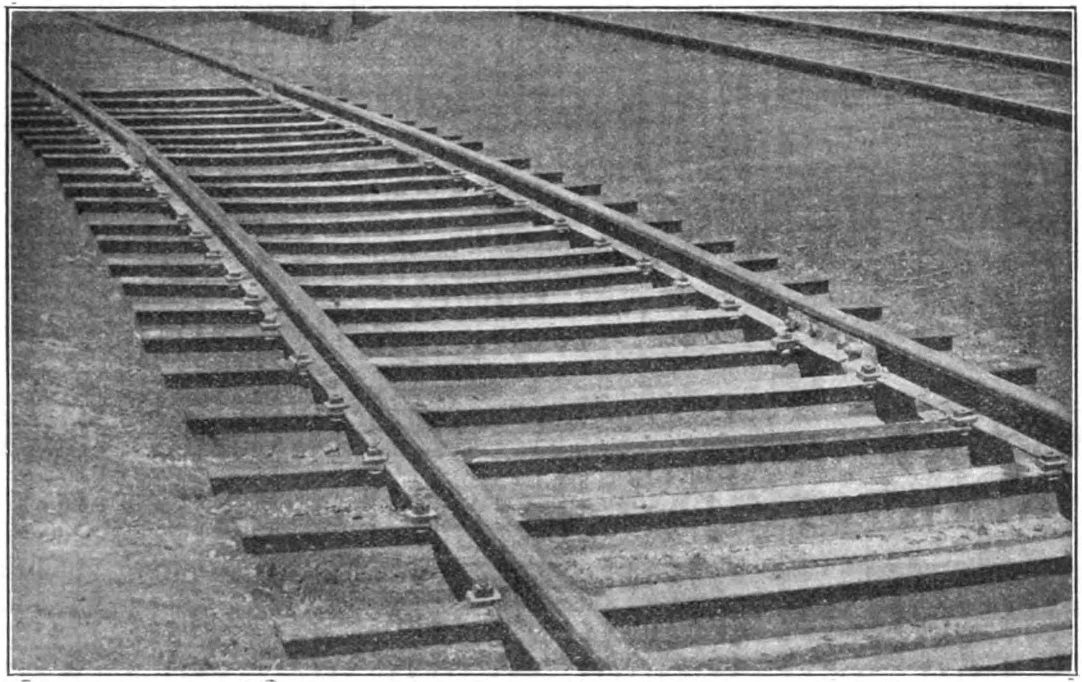

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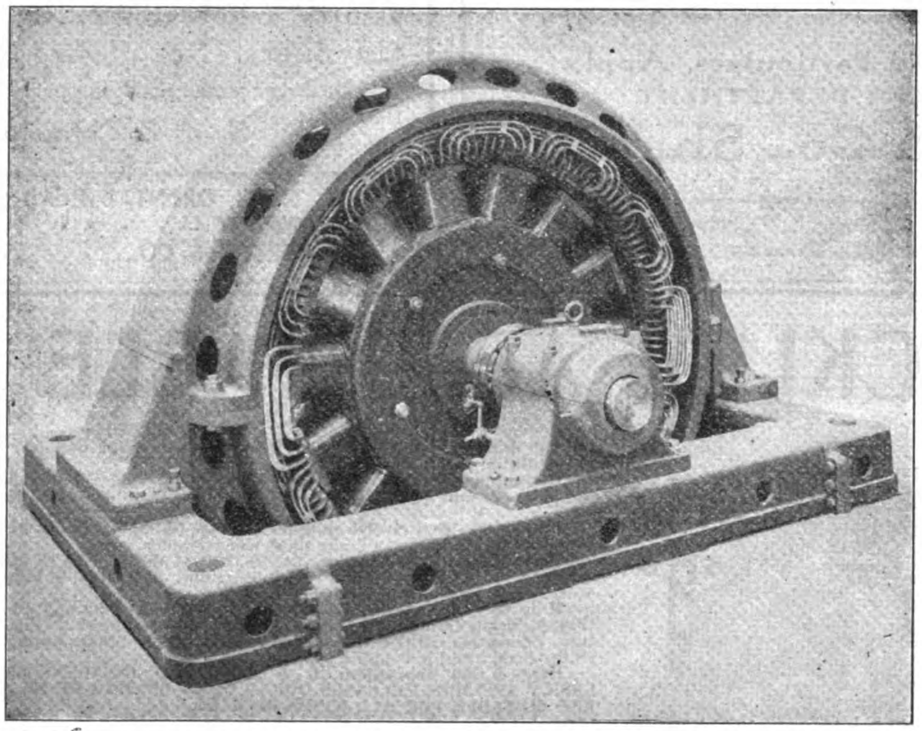

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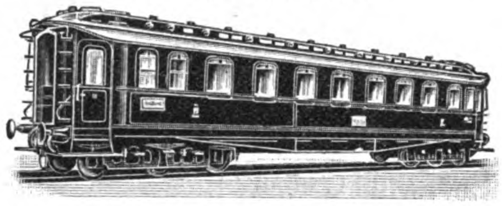

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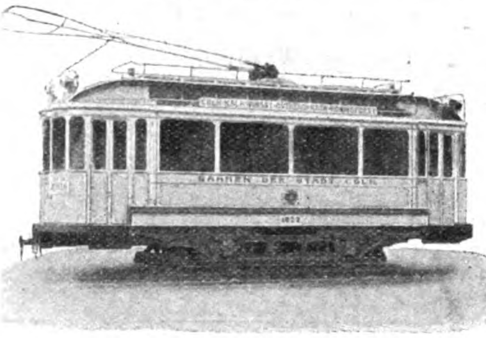

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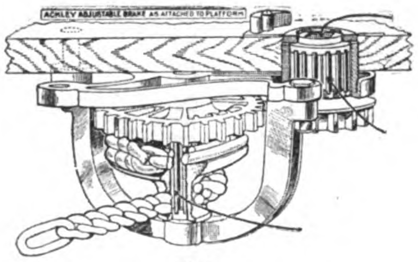

FIG. 1

FIG. 3

The ACKLEY ADJUSTABLE **is the only gear brake** that can be attached to the platform at any angle, owing to the adjustable yoke.

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Here is the conclusion: It is EASY AND INEXPENSIVE TO INSTALL; POWERFUL, YET EASILY APPLIED; RELEASES QUICKLY; NO BINDING OF STAFF OR GEARS; ADAPTED TO ANY AND SUITABLE FOR ALL KINDS OF CARS.

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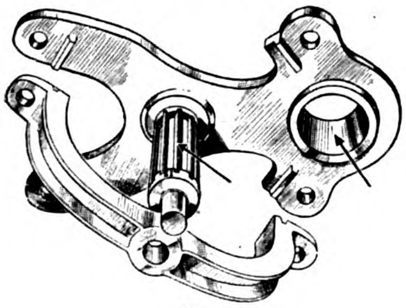

FIG. 2

FIG. 4

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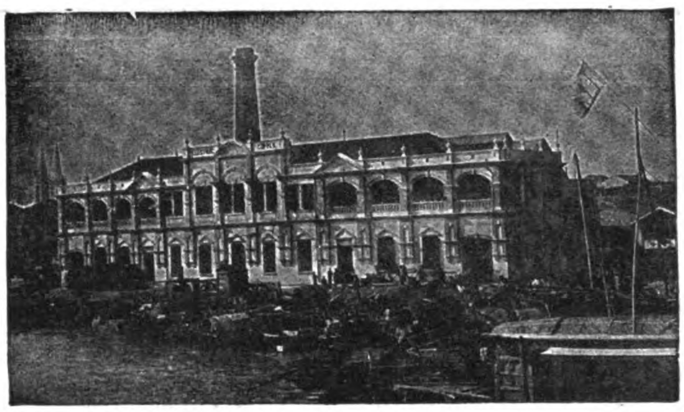

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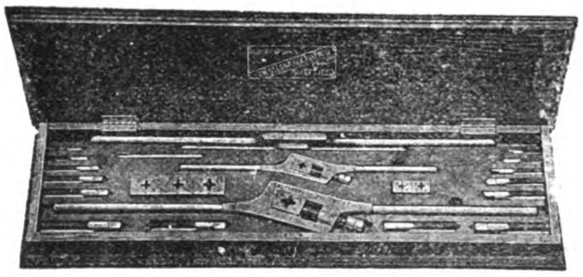

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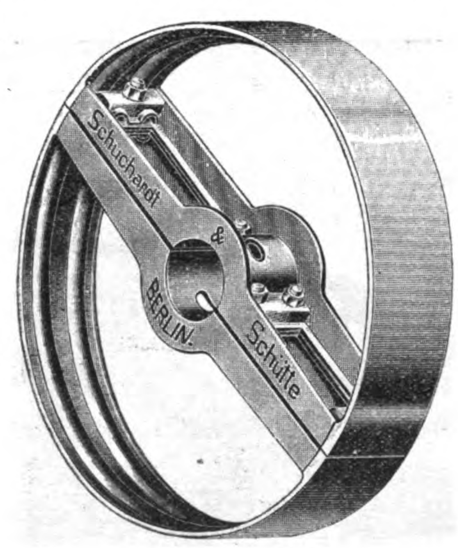

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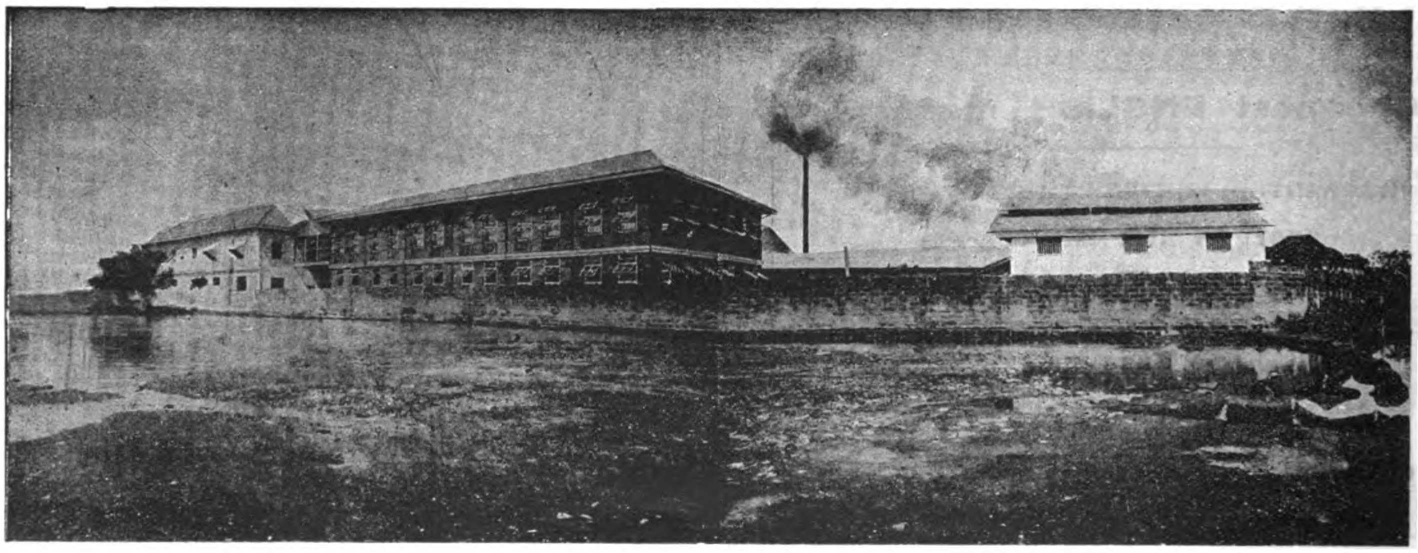

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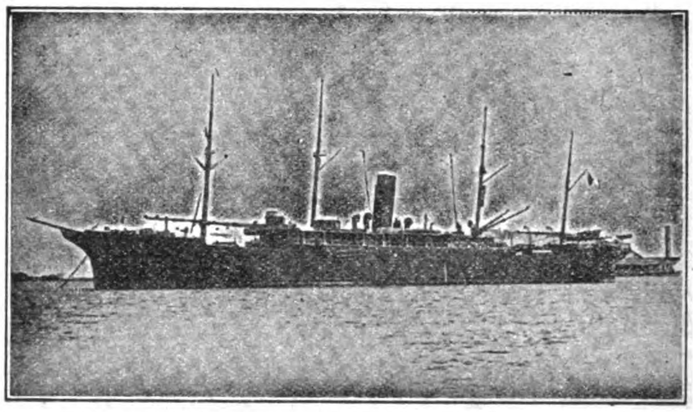

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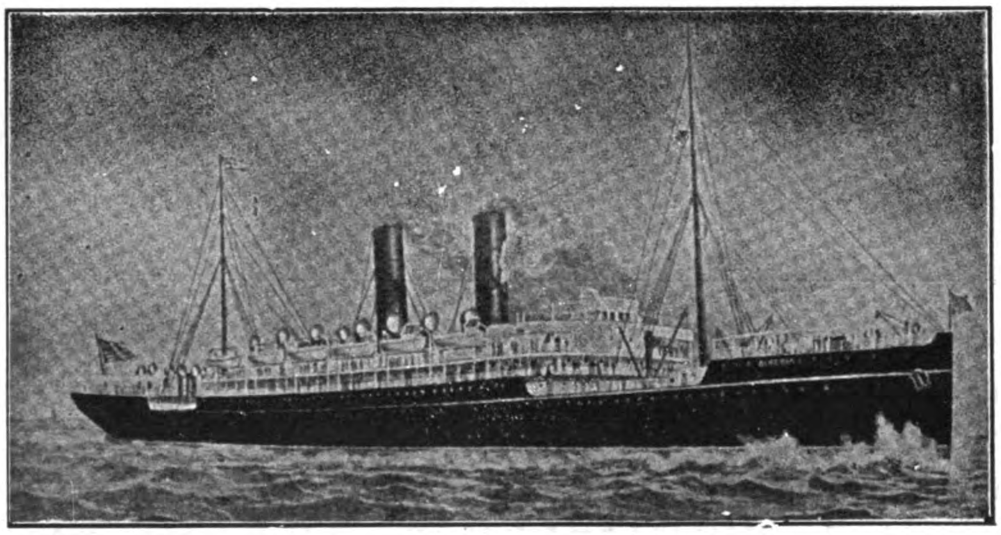

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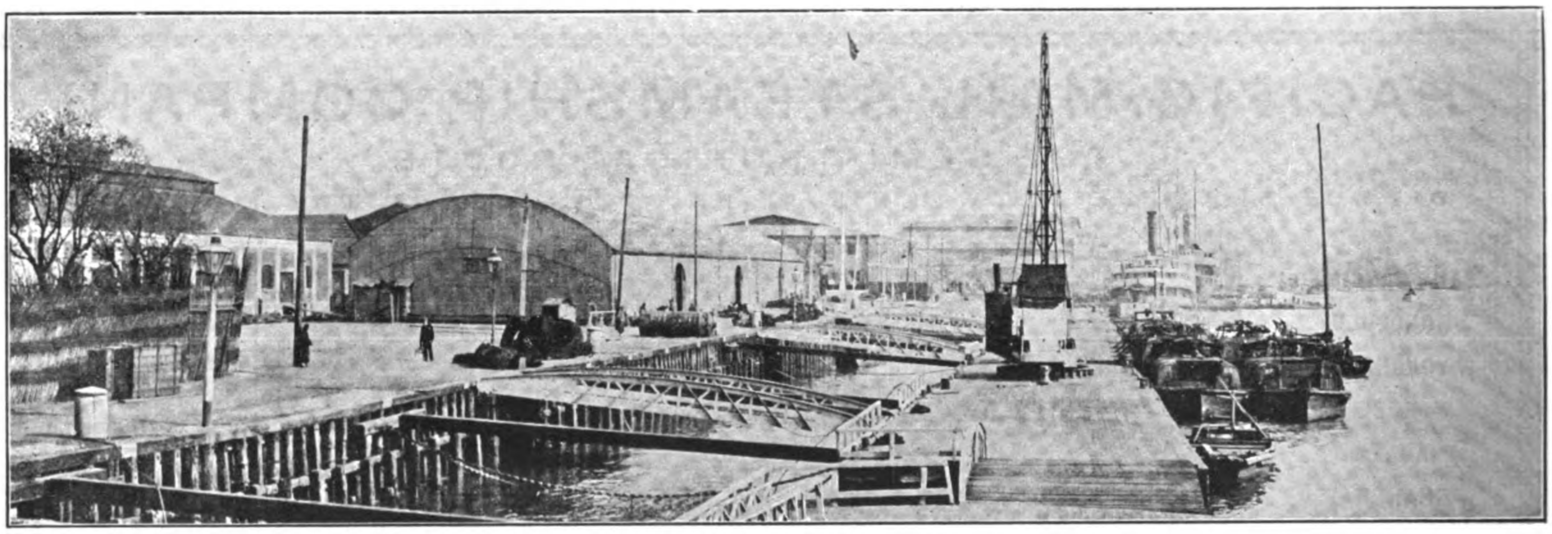

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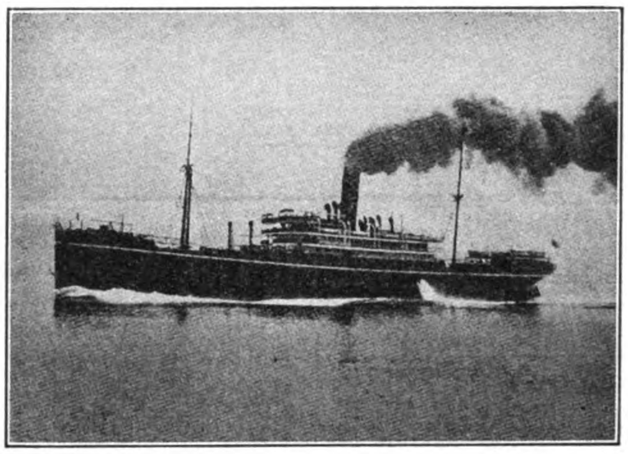

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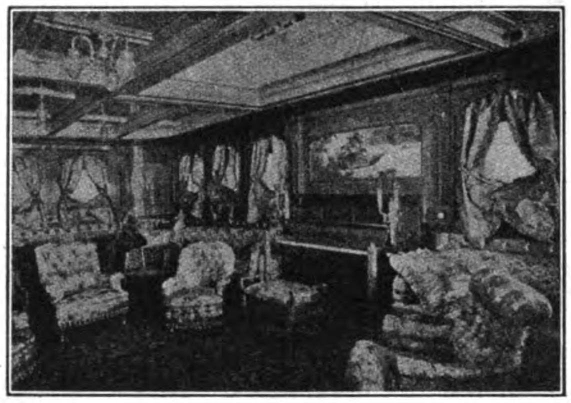

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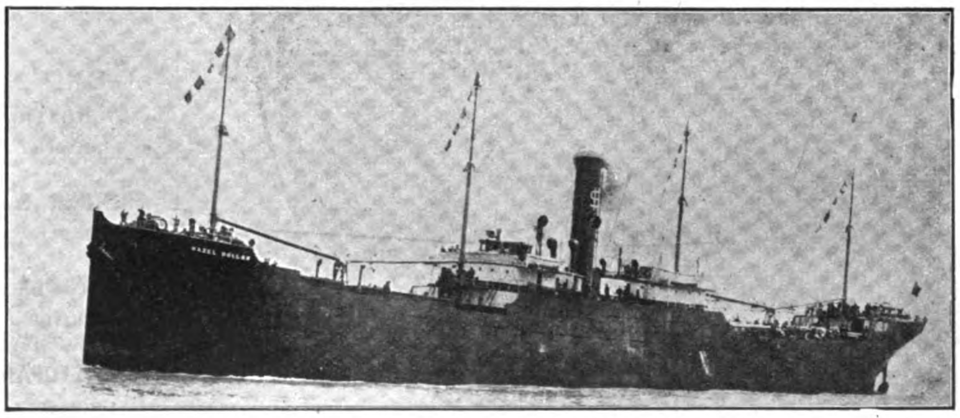

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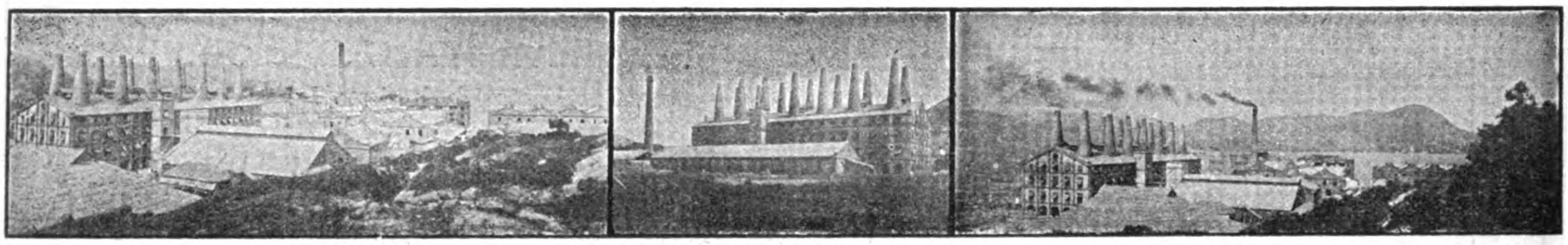

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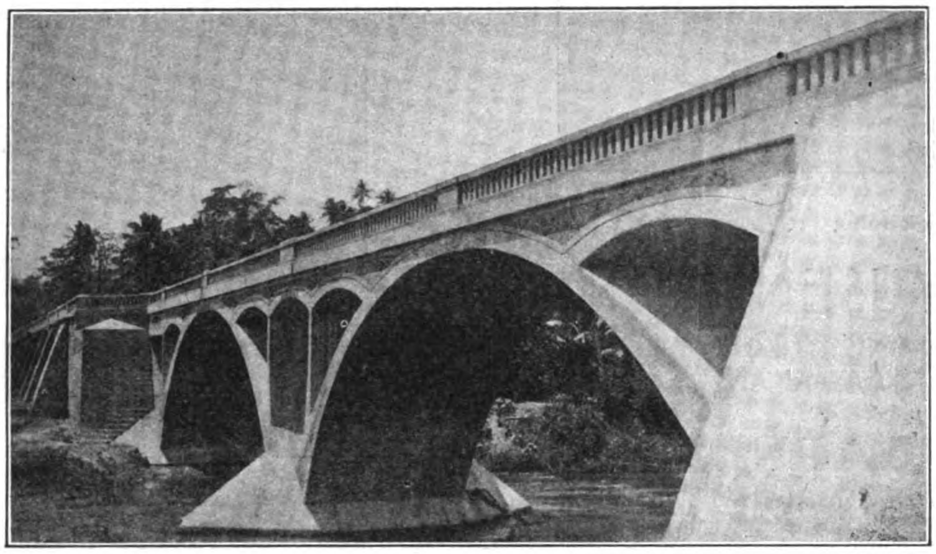

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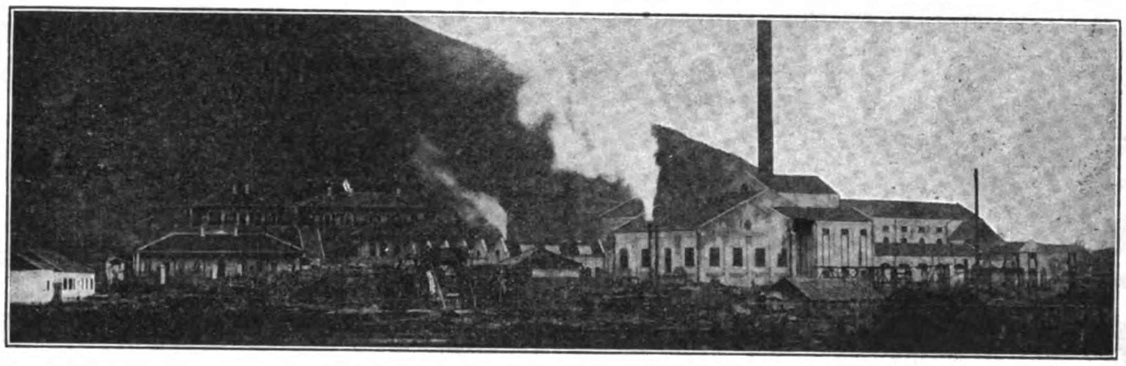

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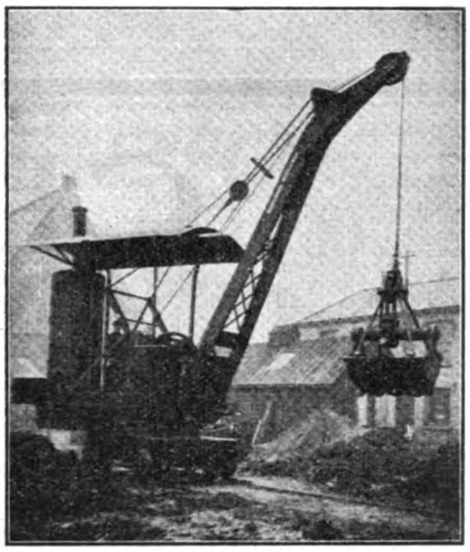

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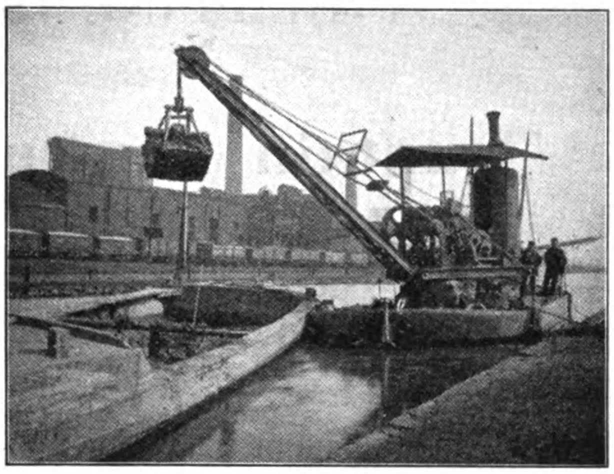

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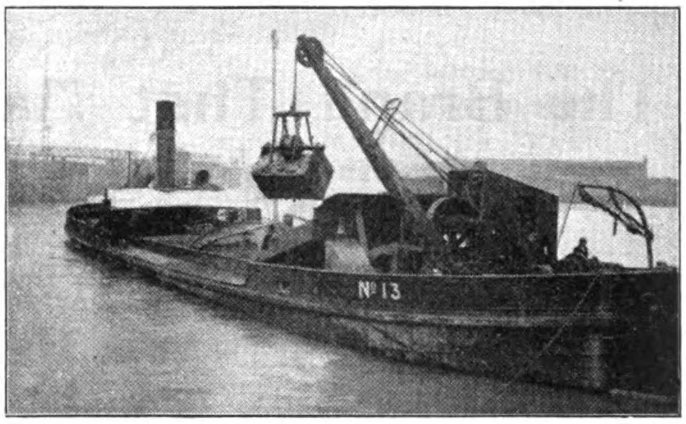

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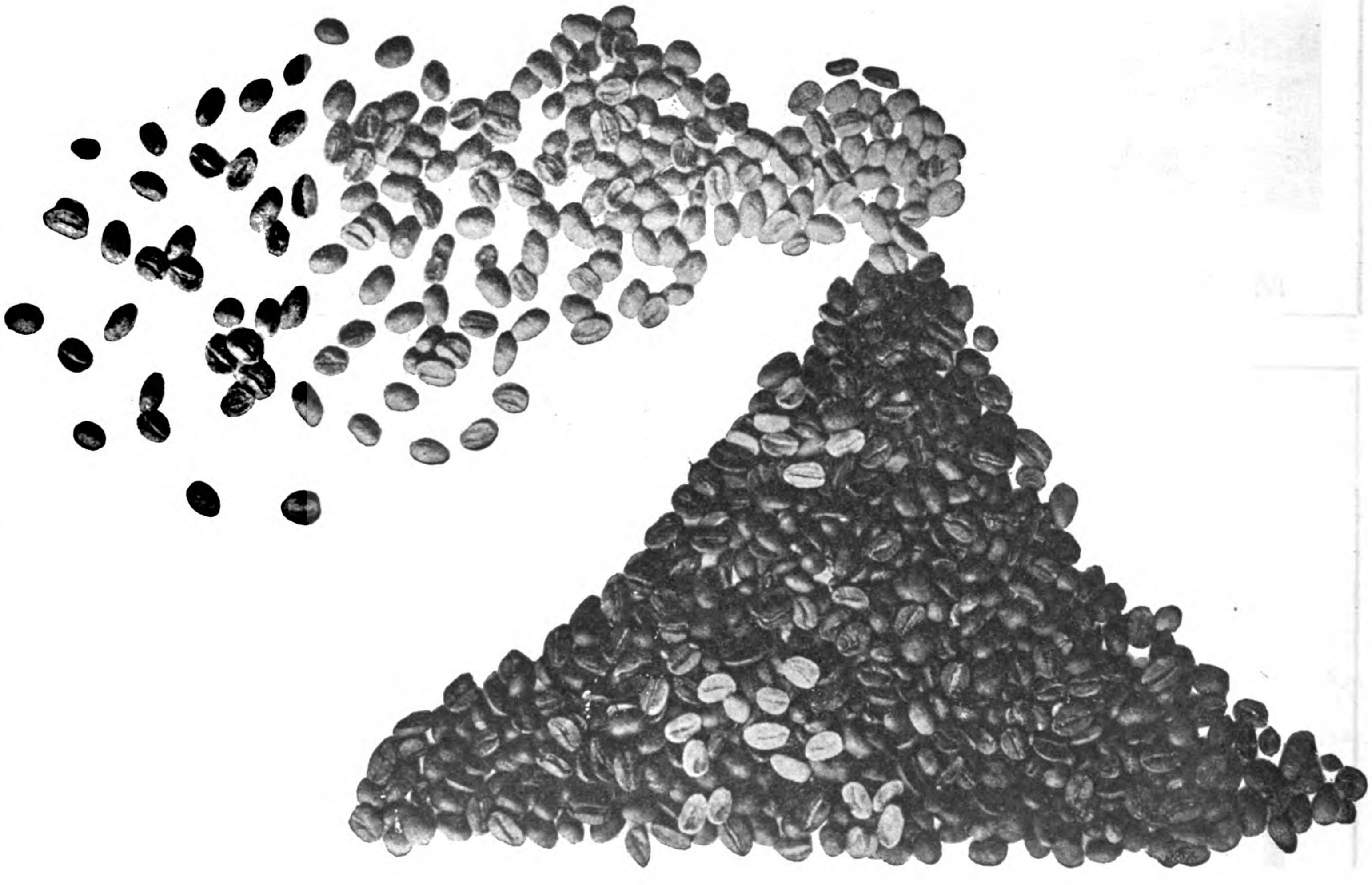

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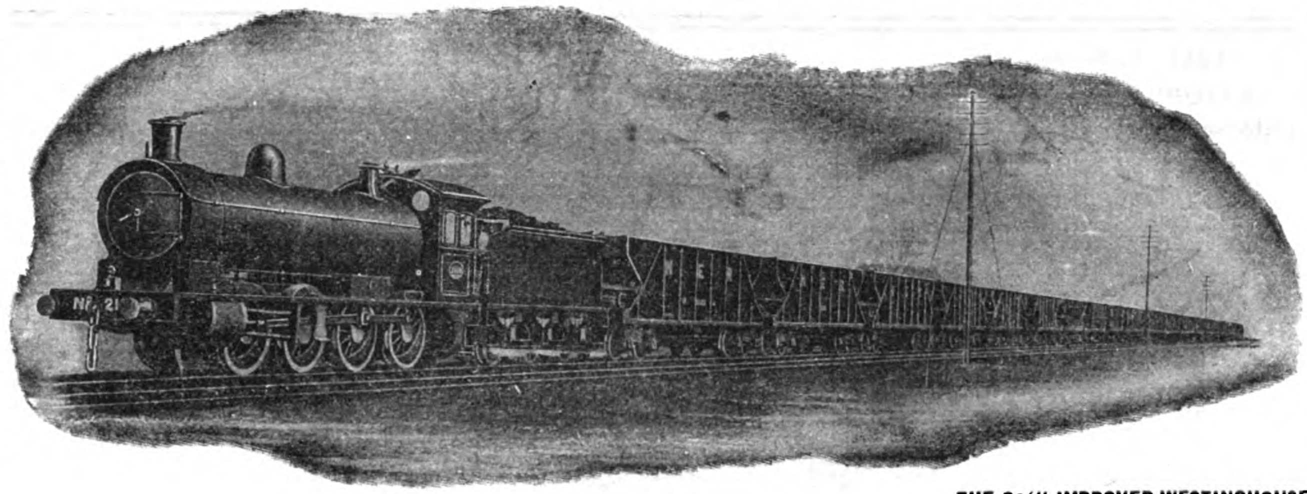

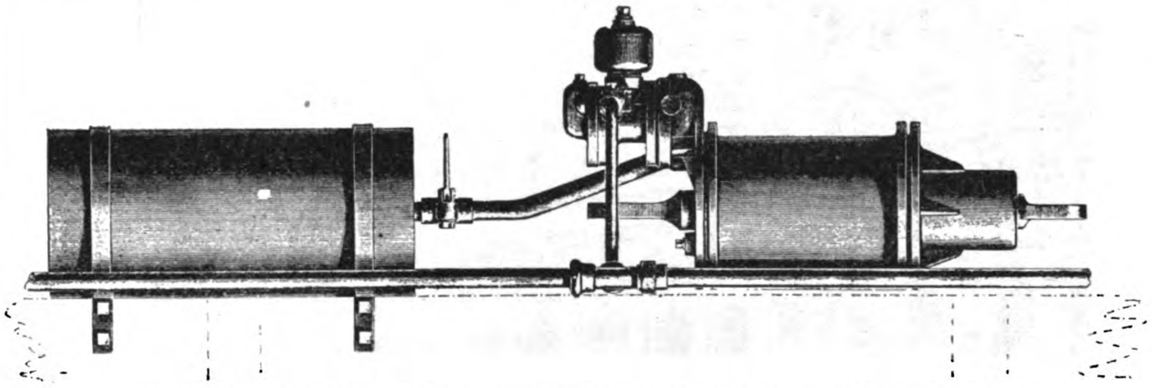

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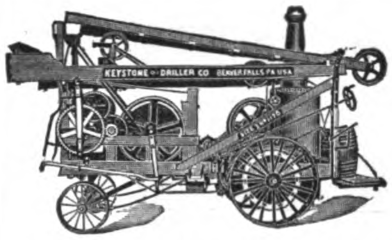

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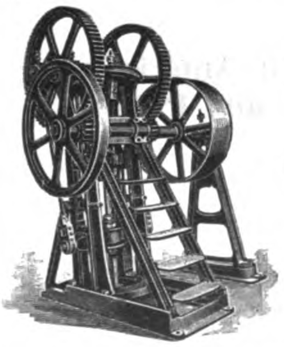

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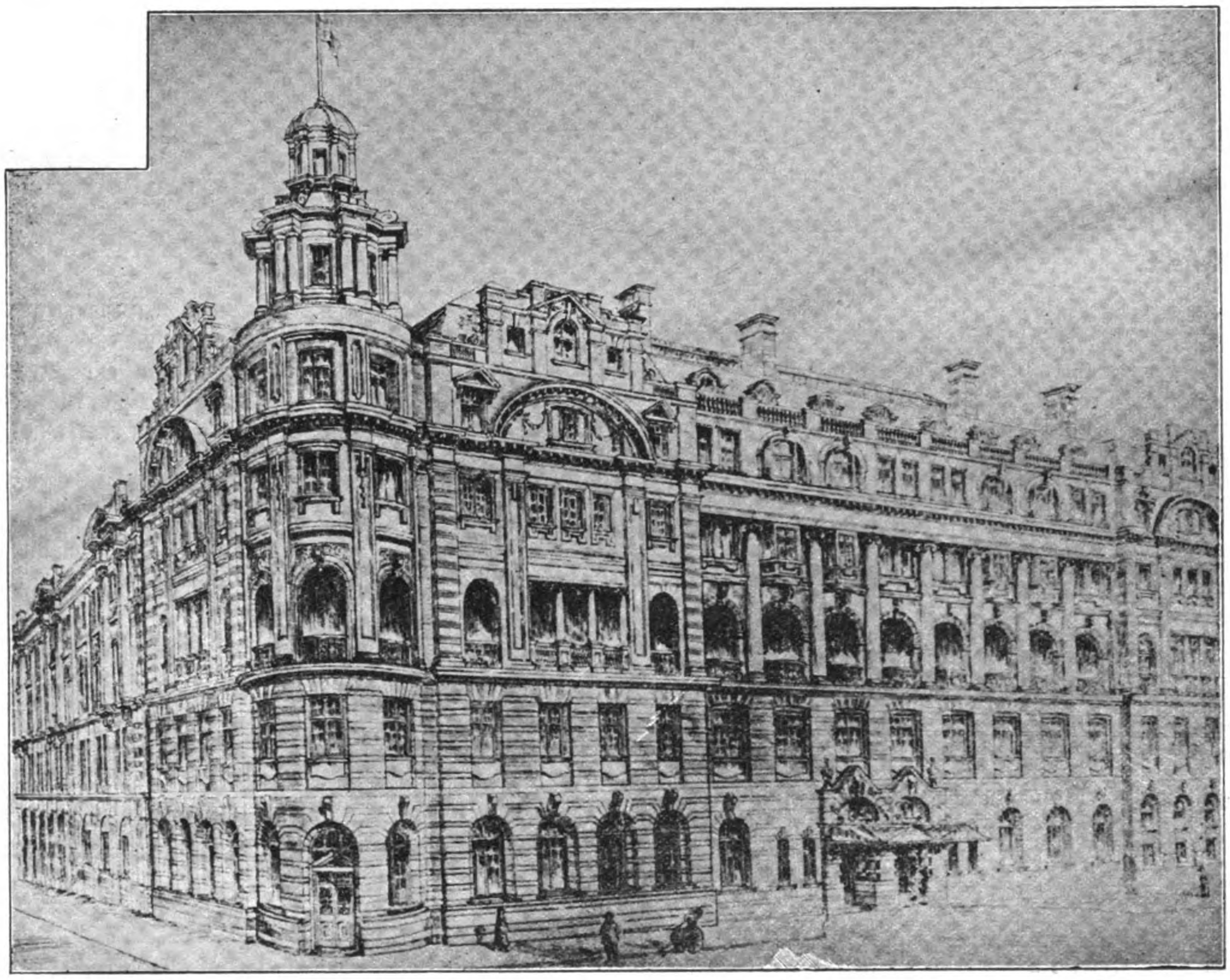

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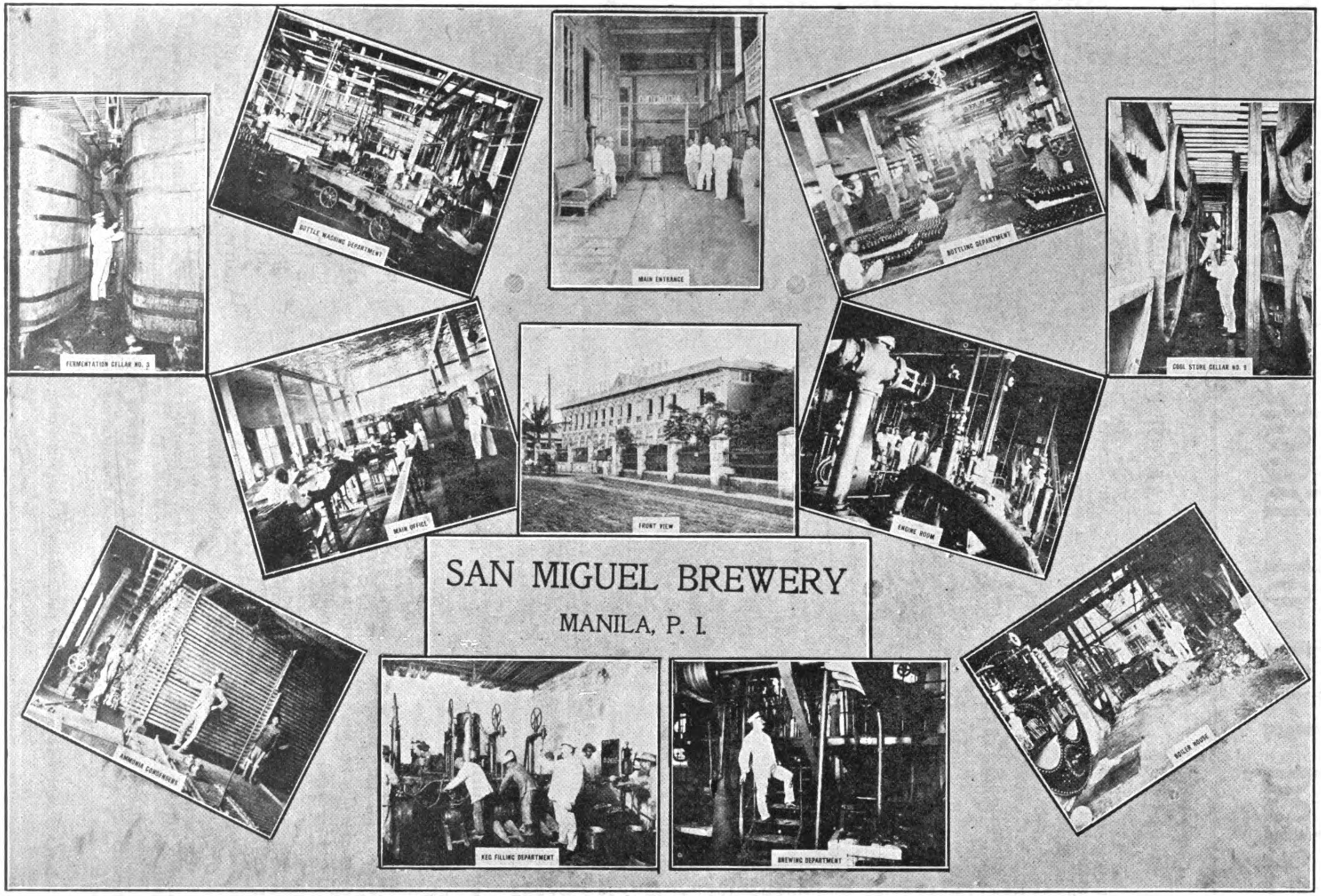

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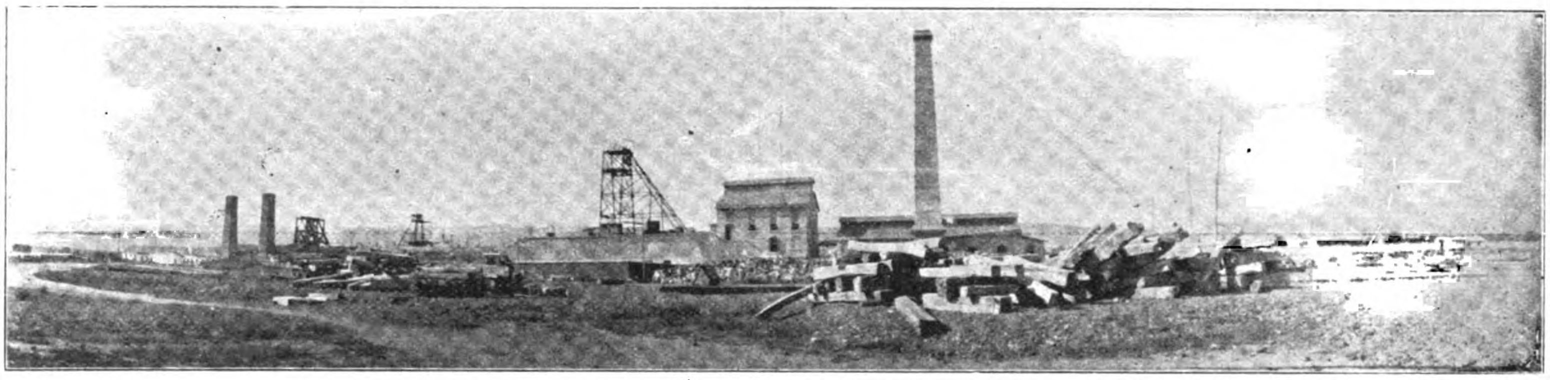

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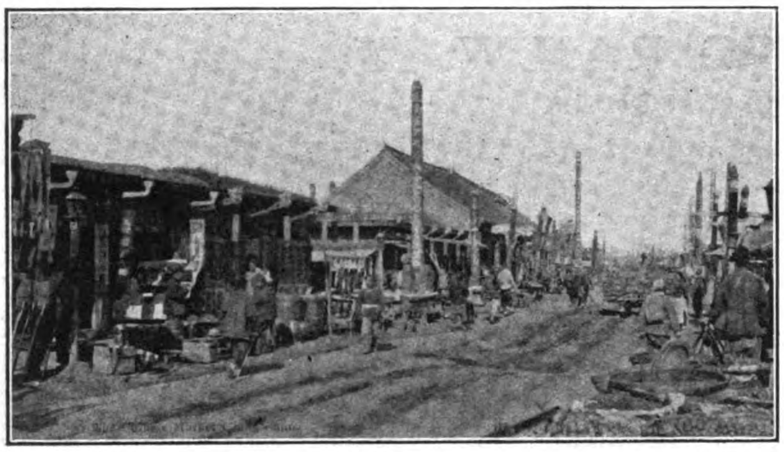

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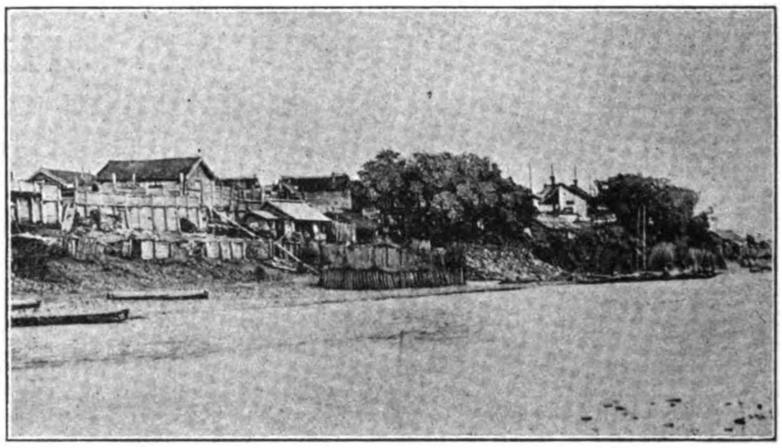

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TIME TABLE
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Down Train			Up Train		
Station	*No. 1*	*No. 2*	*Station*	*No. 2*	*No. 4*
	a. m.	a. m.		a. m.	p. m.
Changchung	7:00	12:00	Coran	10:00	5:00
Coran	8:17	1:17	Changchung	11:17	4:17

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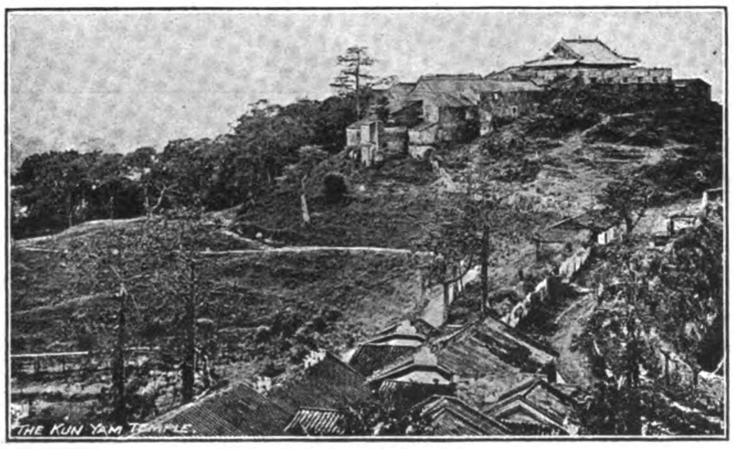

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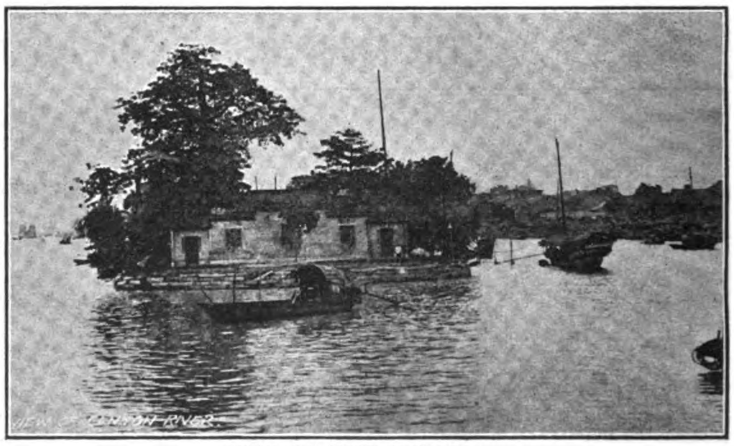

VIEW OF CANTON RIVER

PUBLIC TIME TABLE

IN FORCE FROM 10th JANUARY 1911 UNTIL FURTHER NOTICE.

Canton (Tai Sha Tou) to Sien Tsun.

Miles	STATION		Daily Passenger Trains. No. 1	No. 3
			A. M.	P. M.
·	Canton (TAI SHA TOU)	dep	7.30	2.00
3.63	Shiek Pai	arr	7.39	2.09
		dep	7.42	2.12
7.90	Che Pi	arr	7.53	2-23
		dep	7.57	2.27
12.58	Wu Chung	arr	8 08	2.38
		dep	8.11	2 41
17.09	Nam Kong	arr	8.22	2 52
		dep	8 26	2.56
21.67	Sun Tong	arr	8.38	3.08
		dep	8.41	3.11
23.61	Tong Mei	arr	8.46	3.16
		dep	8.50	3.20
25.54	Nga Yeo	arr	8.55	3.25
		dep	8 58	3.28
29.00	Sien Tsun	arr	9.07	3 37

Sien Tsun to Canton (Tai Sha Tou).

Miles	STATION		Daily Passenger Trains. No. 2	No. 4
			A. M.	P. M.
	Sien Tsun	dep	9.25	4.00
3 46	Nga Yeo	arr	9.34	4.09
		dep	9.37	4.12
5.39	Tong Mei.	arr	9.42	4.17
		dep	9.46	4.21
7.33	Sun Tong	arr	9 51	4.26
		dep	9.54	4.29
11.91	Nam Kong	arr	10.06	4.41
		dep	10.10	·.45
16.42	Wu Chung	arr	10 21	4.56
		dep	10.24	4.59
21.10	Che Pi	arr	10.35	5.10
		d p	10.39	5.14
25 37	Shiek Pai	arr	10 50	5 25
		dep	10.53	5.28
29.00	Canton (TAI SHA TOU)	arr	11.02	5.37

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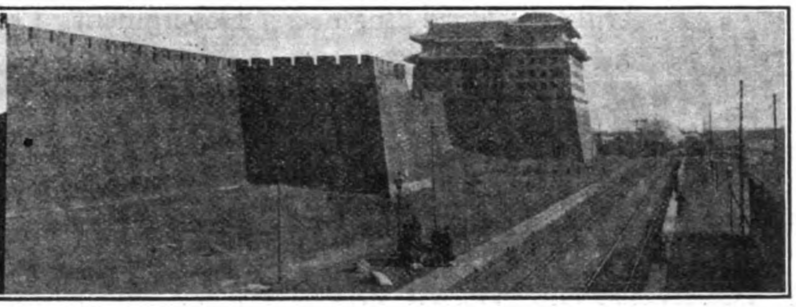

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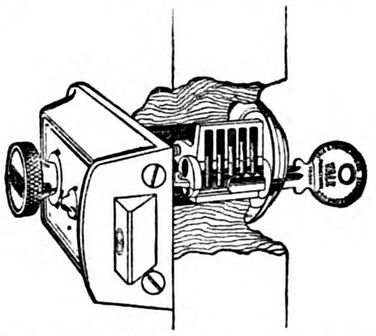

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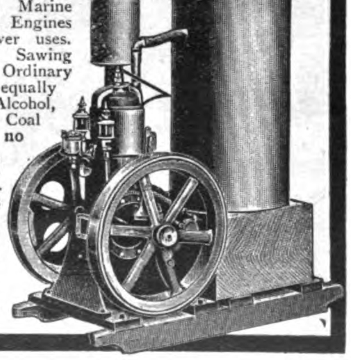

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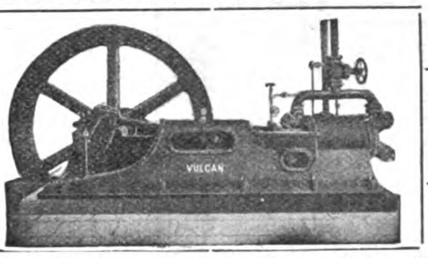
VUL  **CAN**

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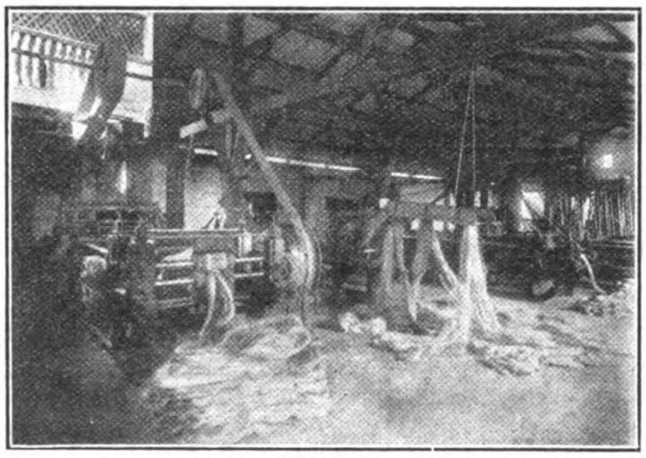

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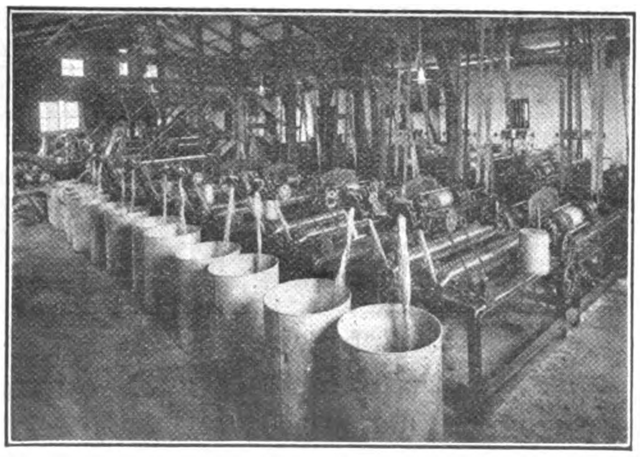

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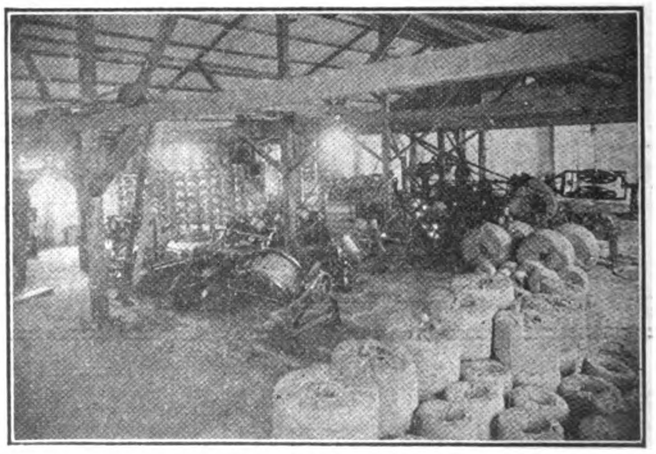

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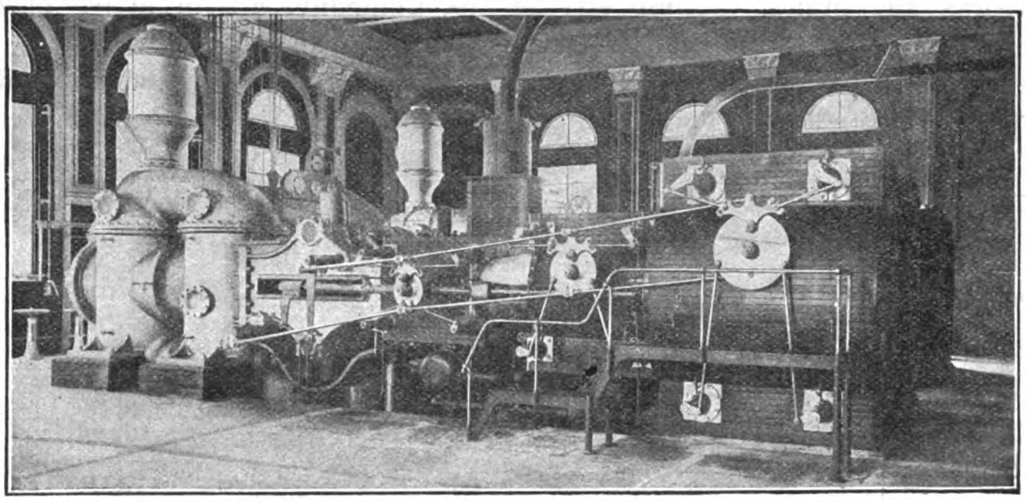

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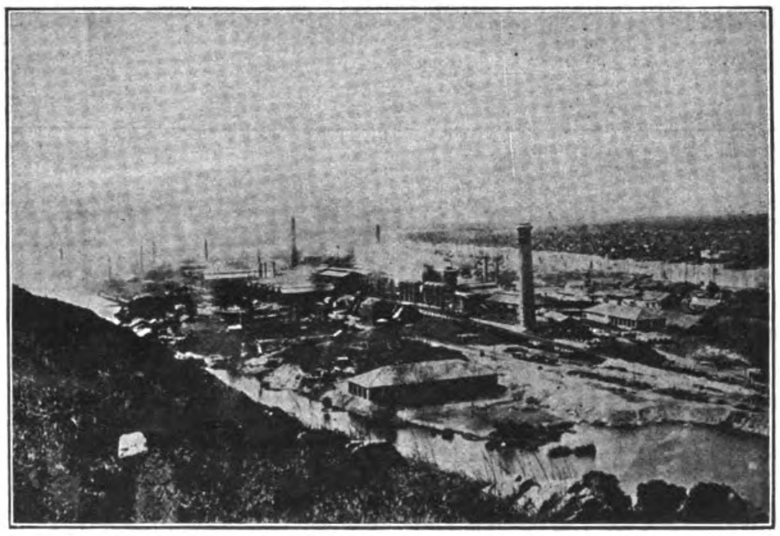

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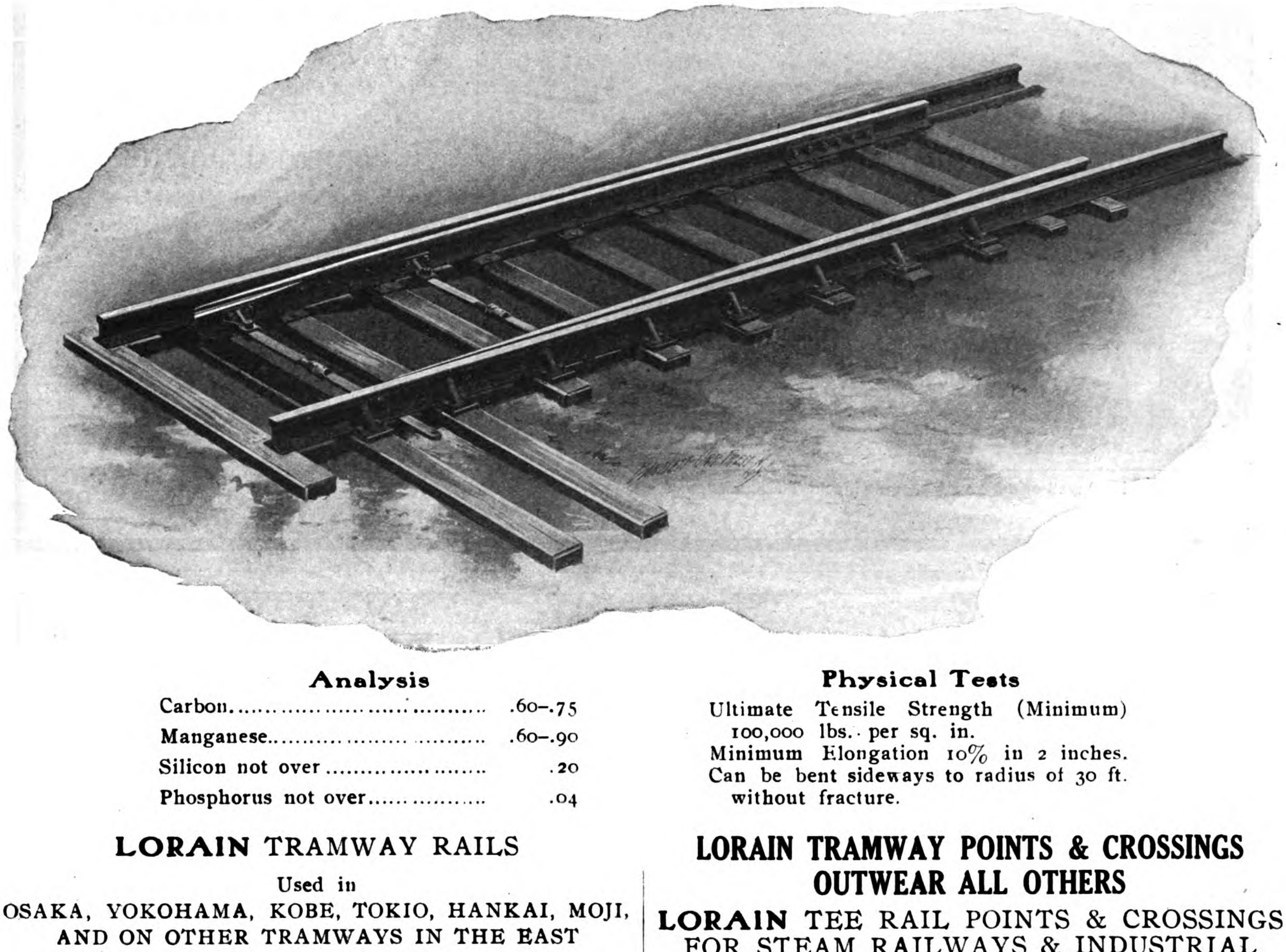

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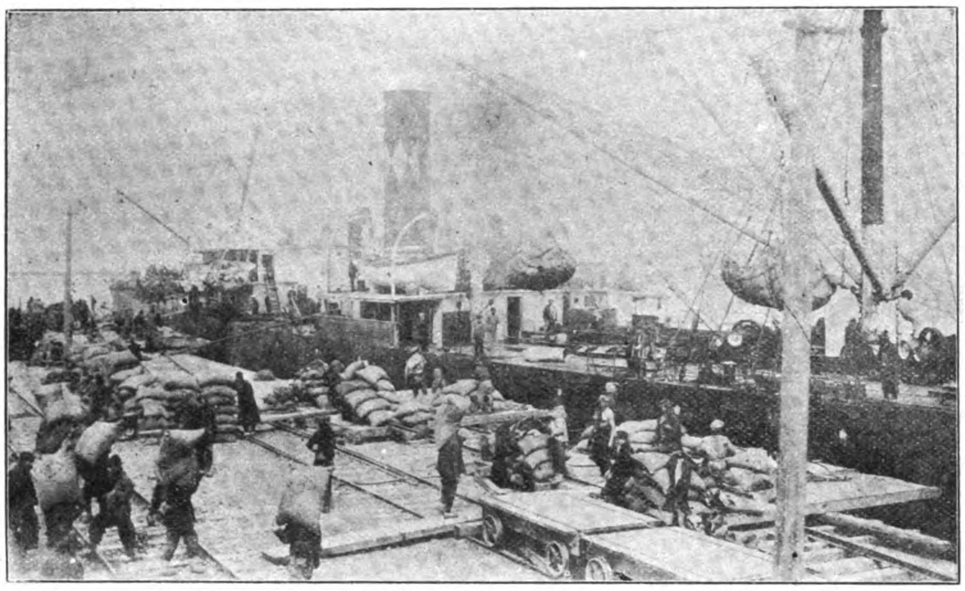

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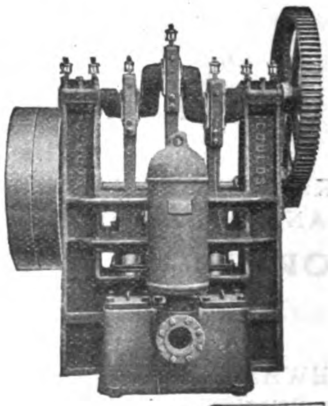

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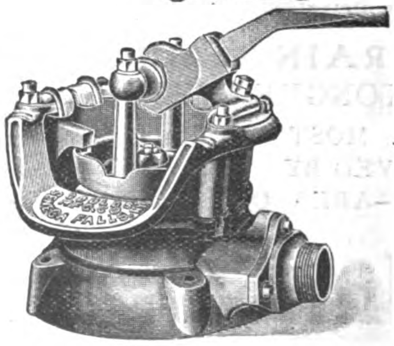

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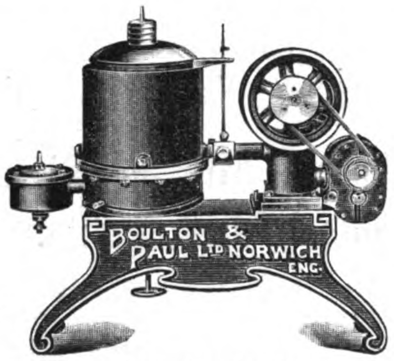

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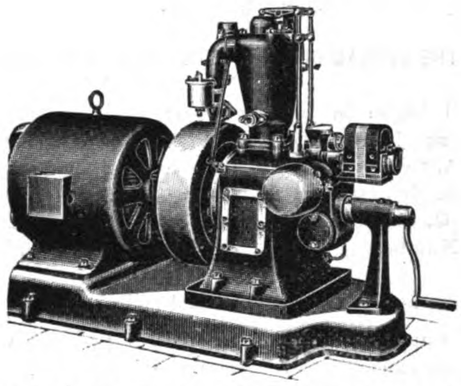

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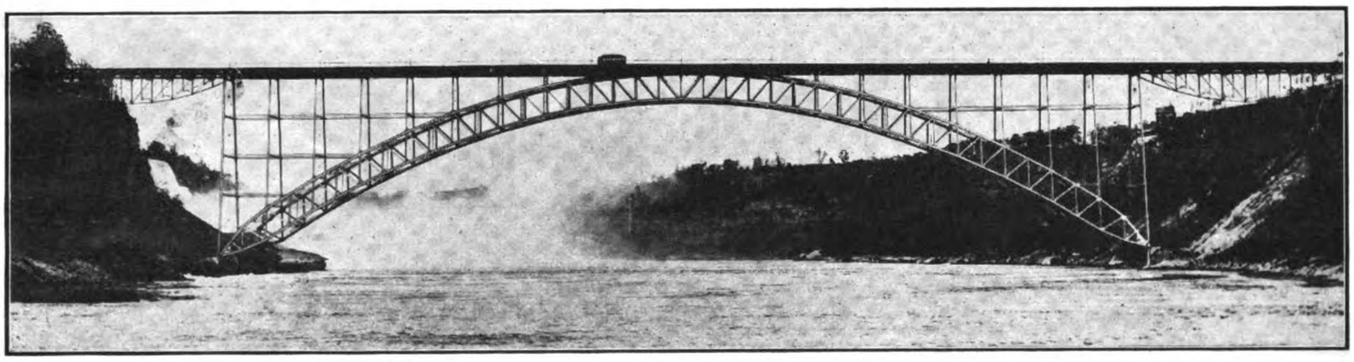

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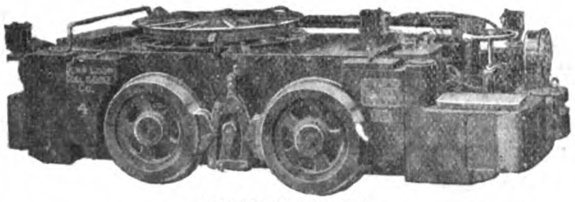

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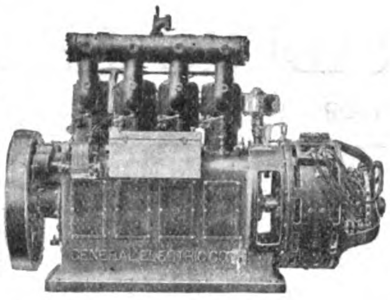

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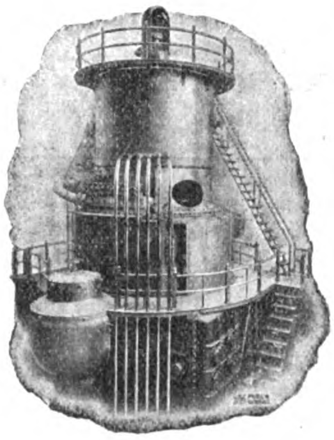

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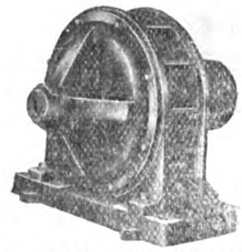

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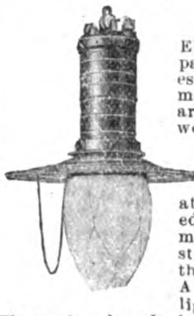

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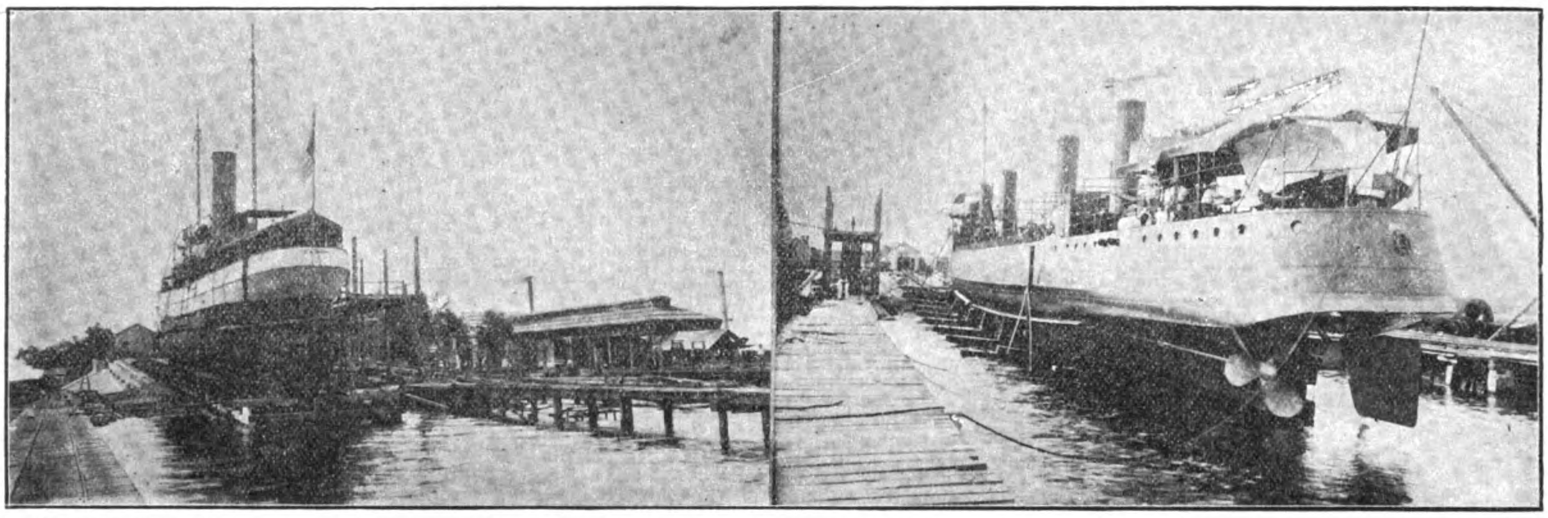

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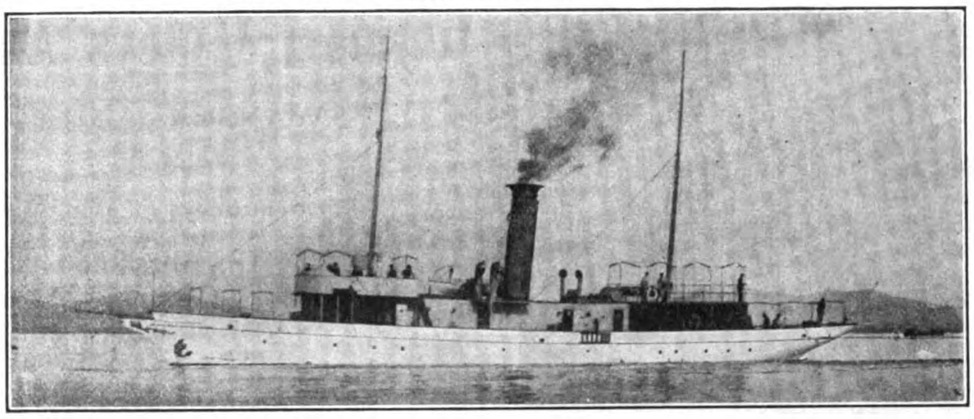

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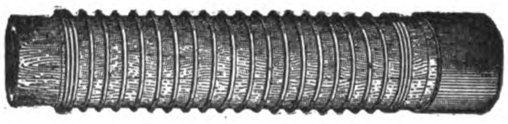

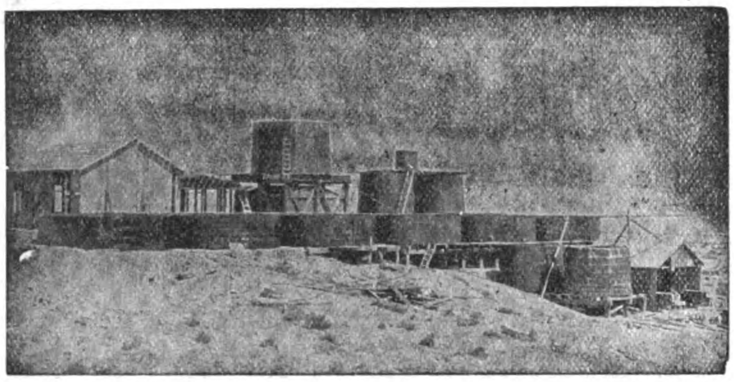

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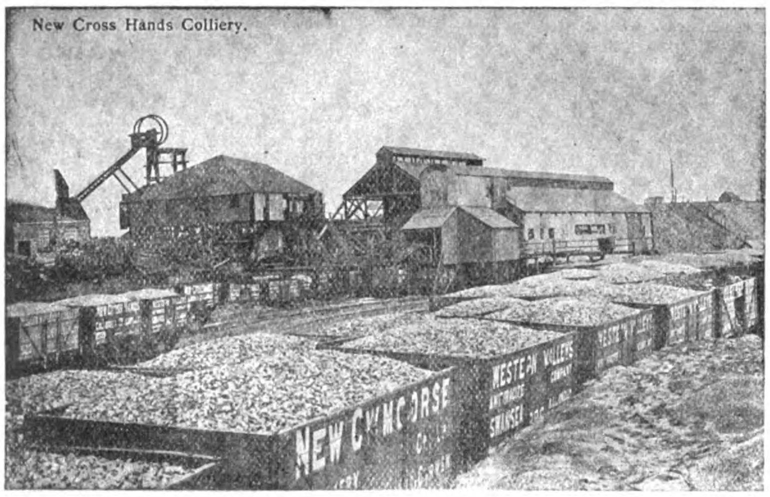

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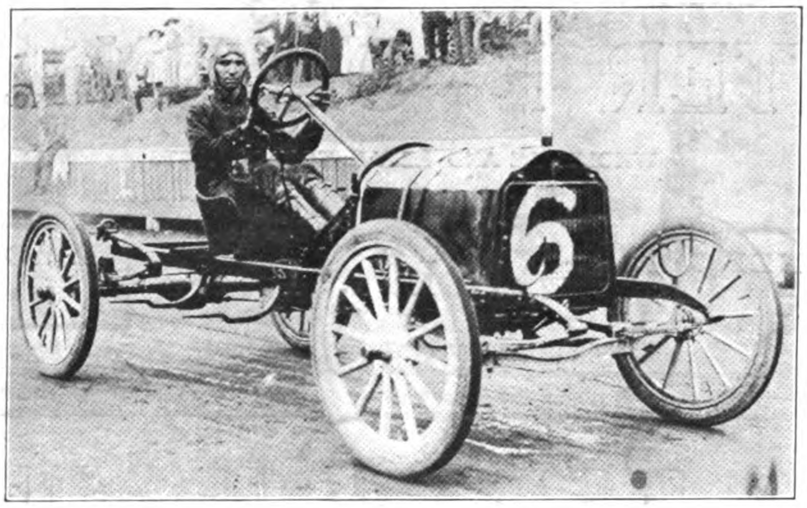

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